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ABSTRACT

An examination of academic-vocational integration in school settings began with a literature review to describe theoretical support for integration. Four themes were synthesized that defined integration as a reform: richer, more coherent curricula; more activity-based pedagogy; more teacher collaboration and coordination; and more attention to school transition. The integration efforts of eight schools in five states (California, Kentucky, Ohio, Oregon, Virginia) in the context of their background characteristics and their policy environment were analyzed through case studies. Approaches fell into three groups: enhanced academics, enhanced relevance, and enhanced engagement. The sites attempted to reform curricula and implement pedagogical reforms. Teacher collaboration reforms included teaming of academic and vocational teachers, joint time together for teams, and new organizational structures that empowered teachers. School transition reforms included use of planning partners for the school, transition-specific curricula, and credentials and certification. All sites reported major barriers to curricular and pedagogical reforms. States generally provided no support for increased teacher collaboration. The following conclusions about integration were reached: it could apply to all types of high schools; it was best approached as a school improvement effort; it took years to implement; it flourished in a conducive regulatory environment; it required capacity-building investments; and it promoted rethinking of educational conventions. (Appendixes include synopses of case study sites and an 88-item bibliography.) (YLB)

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INTEGRATING ACADEMIC AND VOCATIONAL EDUCATION: LESSONS FROM EIGHT EARLY INNOVATORS

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PREFACE

This study explores the practices and policies that define reform efforts aimed at integrating academic and vocational education. It describes how eight high schools have attempted to implement integration reforms and examines the implications of their experience for educational policy.

The report should interest education policymakers at all levels of government, school administrators, and teachers who will implement integration reforms over the next decade, in compliance with the 1990 Amendments to the Carl T. Perkins Vocational Education Act.

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SUMMARY

Vocational and academic education in American high schools separated at the turn of the century. Academic education consists of disciplinary courses such as English, history, mathematics, science, foreign language, and fine arts. It prepares students for further education at college, leading to the achievement of a four-year academic degree. It might be supplemented by technical education courses designed to familiarize students with the uses of technology but not to provide them with occupational skills. In contrast, vocational education offers students training in occupationally specific skills to prepare them for employment after high school graduation. It might also include technical education. Vocational and academic teachers have separate certification procedures. While most students in high school take some vocational courses—for example, typing and keyboarding—academic students typically take different sequences of courses than vocational students.

In recent years, the separateness of these programs has come under attack, with some education reformers advocating a more unified approach to schooling. In 1990, the federal government supported the "integration" of vocational and academic education by incorporating the concept into the 1990 Amendments to the Carl D. Perkins Vocational Education Act of 1984: "Funds made available shall be used to provide vocational education in [high school] programs that integrate academic and vocational education . . . so that students achieve both academic and occupational competencies." As a result of this federal mandate, states and localities throughout the nation are planning to integrate vocational and academic education.

The objective of the research reported here was to provide educators and educational policymakers with information about integration practices and policy supports. Such information will assist those seeking to implement the Perkins amendments, and also those seeking to improve high schools or to understand the debates about different approaches to school reform. This study examines the integration of academic and vocational education in eight schools that implemented integration efforts several years prior to the Perkins amendments.

THE CONCEPT OF INTEGRATION

Current interest in new approaches to schooling at the high school level is the result of a wide variety of perceived problems experienced by students who graduate from the current divided system. These include, but are not limited to, poor basic and generic work-related skills, inability to apply theory to practical problems, lack of engagement in school activities, and poor transition from high school to college or the workplace.

The core of the integration concept is the organization of the best curricular and pedagogical practices of academic and vocational education into a single "integrated" experience to address these problems. Integration has four themes that, taken together, define it as a separate reform effort:

- Schools should develop richer, more structured curricula that enhance academic and generic skills.

- Teaching should have more activity-based pedagogy that motivates students toward learning and provides them with a practical understanding of the world.
- Teachers should collaborate and coordinate to foster the exchange of knowledge and improved communication between disciplines.
- Schools should focus more attention on skills and knowledge needed by students to make the transition to a job or college education.

CONCEPTUAL FRAMEWORK AND CASE-STUDY METHODOLOGY

Implementing educational changes such as those listed above is not straightforward. The high school is a complex organization that has complicated relationships with policymaking bodies. Integration efforts probably require changing many practices in the high school and many of the policies that affect high schools. To understand attempts to implement integration, it is necessary to analyze not only the practices that are adopted but also their policy context.

We adopted an embedded case-study approach that focused on analyzing the integration efforts of specific schools in the context of their background characteristics and their policy environment. We selected eight schools from five states; this sample was purposely chosen to include a variety of state policies regarding vocational education and a variety of types of schools—vocational, mission, and comprehensive.[1]

We visited each school twice, with the second visit about a year after the first, to gain a sense of the process and progress of the effort to implement integration reform. We gathered evidence from multiple sources including written reports; interviews with policymakers, administrators, teachers, counselors, and students; and classroom observations.

We did not attempt to evaluate integration programs in terms of their effects on student outcomes, because we believe that such evaluations would be premature. But we did document participants' own views regarding progress toward achieving site-specific goals and their perceptions of barriers that hindered integration efforts.

THREE APPROACHES TO IMPLEMENTING INTEGRATION

We found that approaches at the eight sites fell into three distinct groups, which we refer to as enhanced academics, enhanced relevance, and enhanced engagement. These three groups provided a useful way to organize our observations across sites. They are not intended to represent a full range of potential approaches to integrating vocational and academic education (for such a taxonomy, see Grubb et al., 1991a).

- **Enhanced academics.** The enhanced academics approach is represented by three vocational schools that implemented integration to increase the academic content of their vocational programs. This was done in response to a state mandate that also required this

[1] *Vocational* high schools are those that provide primarily vocational courses and graduate students who are prepared for occupations. *Mission* schools are those with specialized programs of study, for example, an emphasis on science and technology curricula. *Comprehensive* high schools offer both vocational and academic programs and prepare some students for immediate transition to work and others for transition to college.

content to be taught by academically certified teachers. The state provided few financial inducements or capacity-building funds.

- **Enhanced relevance.** The enhanced relevance approach is represented by three mission schools in which the goal of the integration reforms was to provide students with practical experiences and education relevant to their future work in college and beyond. These programs focused on science and/or technology and served primarily college-bound students. In contrast to the enhanced academics schools, these schools were given freedom to innovate, as their programs were local, bottom-up efforts at school improvement financed in part by grant monies. The states undertook few actions to support integration at these sites.
- **Enhanced engagement.** The two comprehensive schools in our sample focused on increasing the motivation and engagement of students. These schools served broad student bodies, and their administrators were concerned about both a lack of basic academic skills and poor motivation on the part of students. Reform at these schools did not focus on integration per se, but rather on restructuring the school organization to empower teachers to make curricular and pedagogical reforms. States generally undertook no supporting actions except for grants; local actions consisted of school reorganization to increase teachers' decisionmaking ability.

CURRICULAR AND PEDAGOGICAL REFORMS

The sites attempted to reform curricula through increased course content (academic and vocational knowledge and skills); improved course alignment and content connections; and improved workplace-related skills and attitudes. They also attempted to implement pedagogical reforms, including practices such as hands-on problem-solving, cooperative or team-based activities, lessons requiring multiple forms of expression, and project work that draws on knowledge and skills from several domains.

The enhanced academics sites focused on curricular changes and made few attempts to change pedagogy, as the latter was not a part of the state mandate. To strengthen the academic content of their vocational programs, the schools added applied academics (AA) courses, aligned AA with the vocational courses, and added employability courses. The state provided support in the form of commercially produced curricular materials.

The enhanced relevance sites, freed from outside regulations and not under a specific mandate, experimented with both curricular and pedagogical innovations, including AA materials, horizontal alignment of courses, four-year vertically aligned course sequences, increased hands-on learning activities, group projects, journals, and oral presentations. Pedagogical techniques, rather than employability courses, were used to improve workplace skills; these techniques included internships, senior projects, and career plans.

The enhanced engagement sites made little progress in curricular or pedagogical reform per se. Most of the reform effort was directed toward creating a new organization for the schools that increased the authority of teachers, clearing the way for them to change curricula and pedagogy. One school adopted applied academics and placed more emphasis on hands-on activities and group learning. Both schools instituted career plans to improve workplace skills.

TEACHER COLLABORATION REFORMS

Teacher collaboration reforms included the teaming of academic and vocational teachers, joint time together for teams, and new organizational structures that empowered teachers.

The enhanced academics sites supported their extensive curricular changes by hiring academic teachers, forming teacher teams, and providing joint time, including observation time, as indicated by state guidelines. Two sites provided more physical proximity between academic and vocational teachers.

The enhanced relevance sites supported collaboration through teaming and workshops and also by hiring teachers with practical business or industry experience. Schools promoted collaboration, using a variety of methods, including joint instructional time, a school improvement steering committee, and a school-within-a-school arrangement that fostered teacher collaboration.

The enhanced engagement sites fostered collaborative governance structures such as steering committees and staff senates. They did not use teams or joint time to build new curricula.

SCHOOL TRANSITION REFORMS

School transition reforms included the use of planning partners for the school (e.g., parents, businesses); transition-specific curricula (e.g., occupational clusters, employability courses, career-oriented materials, articulation agreements with local colleges); and credentials and certification.

The enhanced academics sites tended to follow state regulations in implementing new practices—for example, using competency-based tests, career passports, and business surveys. Their transition efforts tended to be add-ons to the school and not a part of the curriculum.

The enhanced relevance sites made transition practices a part of the curriculum by introducing technology, career information, and career planning directly into it. They also experimented with portfolio assessment and mentorships or internships for students.

The enhanced engagement sites emphasized organizational reforms: parent and business representation on school governing committees, a parental advisory committee, and business partnerships.

COMMON BARRIERS TO INTEGRATION

All sites reported major barriers to curricular and pedagogical reforms: existing regulations (e.g., seat-time regulations, graduation requirements, college entry requirements); inadequate funding (for materials, planning time, summer pay); lack of adequate existing materials; and lack of support for teacher efforts.

The states generally provided no support for increased teacher collaboration, the exception being the Ohio mandate that implied that teaming should be adopted. The state of one site also required teacher participation in curricular decisionmaking. Lack of funds for incentives and capacity-building was the biggest barrier to fostering teacher interaction. Teachers were

in effect being asked to retrain themselves as a workforce over the course of several years without additional compensation. Even where enthusiasm and commitment were initially strong, the lack of funding eventually led to teacher resentment and burnout and was interpreted by teachers as a signal that integration was not really considered important.

The transition reforms we observed focused chiefly on improving the transition from high school to the workplace. Some sites accomplished a great deal with little or no direct support. The two keys to transition efforts seemed to be (1) involvement of external actors (parents and particularly members of the business community) and (2) curricular and pedagogical reforms that made the schooling experience resemble adult work.

CONCLUSIONS AND POLICY IMPLICATIONS

Our analysis of the case studies and review of the literature point to many lessons that might be helpful to those attempting to integrate vocational and academic education. Because our sample was small, our methodology does not allow fine-tuned conclusions, and the cases vary too widely to enable us to derive specific recommendations, we couch our conclusions in the form of heuristics.

Integration can apply to all types of high schools. Although the federal legislation applies only to vocational programs receiving Perkins funds, integration is a reform that potentially can be undertaken by all types of schools and that can benefit students with varying backgrounds and aspirations.

Integration is best approached as a school improvement effort. Integration touches on all aspects of the school—curriculum, pedagogy, materials, organization, relationships to the community, etc. Because of its potential to change the school in fundamental ways, it should be viewed as a means to organize and focus school improvement efforts.

Integration takes years to implement. We observed sites that had been implementing integration reforms for at least two years, and the broad consensus was that reform would not be complete—or complete enough to permit an assessment of its effects—for at least five years. Because it is a long-term endeavor, integration reform needs committed leadership, relatively stable staffing, and funds to induce change and build new capacities.

Integration connects to systemic reforms. Integration reform connects with systemic reforms, such as calls for site-based management, more teacher participation in decisionmaking, and mission-oriented schooling. Integration is also consonant with reforms to increase teacher professionalism and collegiality. Finally, it connects with testing reforms.

Integration flourishes in a conducive regulatory environment. The sites we studied showed positive results from integration when state and local regulations supported or at least did not put up barriers to local reforms, such as seat-time regulations, graduation requirements, nonacceptance of applied courses, college admission requirements, union seniority rules, certification processes, and teacher evaluation rules.

Integration requires capacity-building investments. Integration flourishes when states and sites support it with a full array of capacity-building investments. Most important are full support for staff development and collaboration. New curriculum materials and testing materials also need to be developed.

Inducements can promote integration. Inducements can play a strong role in getting integration reform started. Grants can be obtained to fund pilot integration programs. Teachers can be rewarded for extra work through promotions, merit pay, or summer pay.

Integration promotes the rethinking of education conventions. Integration is aimed at reforming a fundamental division in the traditional American high school, that between vocational and academic education tracks. Given sufficient support to succeed, integration can change this central division and all of the education conventions that follow from it.

CONTENTS

PREFACE iii

SUMMARY v

FIGURE AND TABLES xiii

Section

1. INTRODUCTION 1
   - Research Objective 2
   - Research Approach and Scope 2
   - Organization of the Report 3

2. INTEGRATION AS AN EDUCATIONAL REFORM 4
   - Problems Integration Has Been Proposed to Address 4
   - The Four Themes of Integration 5
   - Integration in Practice 6
   - Competing Reforms 7

3. CONCEPTUAL FRAMEWORK AND CASE-STUDY METHODOLOGY 8
   - Conceptual Framework 8
   - Study Design and Case Selection 10
   - Case-Study Procedures 11
   - Three Approaches to Integration 13

4. CURRICULAR AND PEDAGOGICAL REFORM 18
   - Curriculum and Pedagogy at Enhanced Academics Sites 19
   - Curriculum and Pedagogy at Enhanced Relevance Sites 27
   - Curriculum and Pedagogy at Enhanced Engagement Sites 31
   - Common Issues Regarding Curricular and Pedagogical Reform 34

5. FOSTERING NEW TEACHER-TO-TEACHER RELATIONSHIPS 38
   - Practices That Foster Teacher-to-Teacher Interactions 40
   - Site-Level Supports for Teacher-to-Teacher Interaction 44
   - State-Level Policy Support for Teacher-to-Teacher Interaction 47
   - Common Issues Regarding Teacher-to-Teacher Interaction 49

6. IMPROVING SCHOOL TRANSITION 50
   - School Transition at Enhanced Academic Sites 50
   - School Transition at Enhanced Relevance Sites 57
   - School Transition at Enhanced Engagement Sites 60
   - Common Issues Regarding School Transition 64

7. CONCLUSIONS AND POLICY IMPLICATIONS 66
   - Integration Can Be Productive for All Types of Schools 66
   - Integration Is Best Approached as a Comprehensive School Improvement Effort 67
   - Integration Takes Years to Implement 68

Integration Connects to Systemic Reforms 68
Integration Flourishes Only in a Conducive Regulatory Environment 70
Integration Requires Capacity-Building Investments 71
Inducements Can Promote Integration 72
Integration Promotes the Rethinking of Educational Conventions 73

Appendix: SYNOPSES OF CASE-STUDY SITES 75

BIBLIOGRAPHY 79

FIGURE

3.1. Policies at All Levels Can Support or Hinder the Integration of Academic and Vocational Education Practices 9

TABLES

3.1. Sites Vary by Background Characteristics 12
3.2. Sites Represent Three Approaches to Integration 14
4.1. Curricular Integration Practices by Integration Approach 19
4.2. Activity-Based Learning Practices by Integration Approach 20
4.3. Local Actions to Foster Curricular and Pedagogical Integration Reforms 21
4.4. State Actions That Shaped Curricular and Pedagogical Integration Reforms ... 22
5.1. Local Actions to Foster Teacher-to-Teacher Interactions 39
5.2. District and State Actions That Shaped Teacher-to-Teacher Interactions 40
6.1. School Transition Practices by Integration Approach 51
6.2. Local Actions to Promote School Transition 52
6.3. State Policy Actions to Promote School Transition 53

1. INTRODUCTION

Commission reports and studies in the 1980s brought attention to American high schools by focusing on the poor performance of graduates and high dropout rates (National Commission on Excellence in Education, 1983; Carnegie Task Force, 1989; Commission on Workforce Quality and Labor Market Efficiency, 1989; William T. Grant Foundation, 1988; National Center on Education and the Economy, 1990). Educators and policymakers proposed a variety of reforms to remedy the perceived problems, some trivial and some that included a complete reconceptualization of the high school.

One reform advocated was the integration of academic and vocational education. Vocational and academic education in high schools separated at the turn of the century amid widespread debate about the proper goals for education. Since that time, the two components have become increasingly separate. In general, academic education refers to a sequence of courses including English, history, mathematics, science, foreign languages, and fine arts that prepares students for further education leading to a four-year college degree. Vocational education refers to a sequence of courses that prepares students for employment after high school graduation by providing them with training in specific occupational skills. Technical education refers to courses designed to familiarize students with the use of technology but not to provide them with an occupational skill. Technical courses can be found in both academic and vocational programs.

Vocational and academic teacher certification processes have also separated. While most students in high school take some vocational classes (Hoachlander, 1990), students who are headed directly for college and those who are headed directly for the workplace typically take separate sequences of courses in their respective programs.

The concept of integration echoes reforms advocated forty years ago by John Dewey (1944, 1971). The core of the integration concept is to organize the best curricular and pedagogical practices of academic and vocational education into a single, "integrated" experience. The objectives of integration are to ensure that each student learns both theory and application in chosen subject areas, learns generic skills that are needed in the workplace, and learns skills that will aid in the transition from high school to postsecondary experiences.

While policymakers debated about which reform concept would remedy the problems experienced by high schools, the federal government passed the 1990 Amendments to the Carl D. Perkins Vocational Education Act of 1984 which required that "funds made available shall be used to provide vocational education in programs that integrate academic and vocational education in such programs through coherent sequences of courses so that students achieve both academic and occupational competencies" (Section 235). The amendments also demanded that state plans describe how they will provide a vocational program that "integrates academic and occupational disciplines" (Section 240).

The federal mandate moved the abstract and sometimes distant debates of national policymakers into the more immediate realm of state and local officials who now must implement integration in vocational education as a condition for receiving federal Perkins Act funds. While the directive to spend Perkins funds on some form of integration is clear, the amend-

ments themselves provide little guidance on what integration is. Practitioners are hampered by the lack of information on both integration practices and policy supports that would encourage real change in the classroom behaviors of students and teachers—in short, both what to do and how to do it. This lack of information, combined with the requirement to integrate, could lead to compliance efforts that, while well-meaning, will be ineffective or even detrimental (Benson, 1991).

Information about integration (what it is, what practices define it, and what policy changes are needed to support it) would be useful to two groups: policymakers who are making choices among proposals for improving the American high school and who need information to compare integration to other proposed reforms, and those who are specifically reliant on federal Perkins Act funds for vocational programs and therefore need information to enable them to implement the act successfully.

Over the past decade, some innovative schools have attempted to translate the concepts of integration into practice (Grubb et al., 1991a). One state, Ohio, has promoted a statewide attempt at integration. Schools that have implemented integration efforts can be studied to provide some of the needed information.

RESEARCH OBJECTIVE

The objective of the research reported here was to provide educators and educational policymakers with information on integration practices and policies. The study examines integration in school settings to address the basic question, What is integration and how has it been implemented? We have attempted to answer that question through four tasks:

- Define the theoretical support for integration.
- Describe the integration practices schools have adopted.
- Describe the policy supports schools and states have used to implement these practices.
- Describe the barriers to integration schools have experienced and how they overcame them.

RESEARCH APPROACH AND SCOPE

First, we reviewed the recent literature on integration and school reform. The results of this review enabled us to describe the theoretical support for integration and to develop a framework for addressing the remaining tasks. The literature on school reform showed that understanding integration in school settings required us to examine all the functions of a school and how integration might have changed them. In addition, it indicated that we needed to examine each school's integration attempt in the context of its policy environment.

Second, through case-study analyses, we documented the integration practices adopted by sites, the elements in the policy environment that shaped school-level responses, and the barriers schools experienced. We reviewed educational practices at each school—objectives, materials, curriculum, pedagogy, organization, etc.—to ensure that we understood all the effects of integration on the school. We also examined the policies supporting integration at

each site. We documented participants' own views of their successes and failures and the barriers that prevented their further efforts.[1]

Our sample is small, and each site has a story to tell about integration reform that might not be, in its details, generalizable to other sites. Nevertheless, we believe that the sample was varied enough to permit identification and analysis of many of the systemic links between practices, policy supports, and sites' progress toward their own integration goals.

ORGANIZATION OF THE REPORT

The remainder of this report is organized as follows. Section 2 addresses the concept of integration generally, identifying the groups that have called for integration as an educational reform, the problems they believe it can address, the unique themes or elements of integration that define it as a separate reform, and some opposing views. Section 3 addresses implementation issues. It describes our conceptual framework and the case-study methodology. It provides general information about our sample of eight schools which, we conclude, represent three approaches to integration. Sections 4 through 6 describe the integration-related practices and supports that characterize each of these approaches in three major areas: curriculum and pedagogy (Section 4), teacher-to-teacher interactions (Section 5), and transition from school to college or the workplace (Section 6). Section 7 summarizes our conclusions regarding the most effective policy supports for integration.

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[1]We did not attempt to evaluate integrated programs in terms of changes in student outcomes. Few such evaluations have been conducted, and the recent adoption of many programs suggests that few programs have progressed to a state where summative evaluation of student outcomes would make much sense (Stasz and Grubb, 1991; Grubb and Stasz, 1991).

2. INTEGRATION AS AN EDUCATIONAL REFORM

The concept of integration has captured the interest of school reformers, academics, researchers, and employers; indeed, so many constituencies have embraced integration as an educational reform that it has all the signs of being a movement (Grubb et al., 1991a). Most groups define integration generally as organizing the best curricular and pedagogical practices into a single, "integrated" high school experience. However, the definitions used by different groups vary considerably in their specifics. Each group tends to define the specific aspects of integration in ways that highlight its potential to solve problems of interest to that group (Stasz and Grubb, 1991). The Perkins legislation does not define integration; it only refers to "a coherent sequence of courses."

This section surveys how integration has been understood in the current debate over different possible reformations of the high school and distills the key elements of the concept that separate it from other reforms. This breakdown is then used in subsequent sections to help structure the case-study analyses.

PROBLEMS INTEGRATION HAS BEEN PROPOSED TO ADDRESS

As with other high school reform agendas, the calls for integration are designed to rectify perceived problems. The literature on integration provides several views about problems with "traditional" education that more integrated programs might address:[1]

- **Poor basic and generic work-related skills.** Employers, federal legislators, and critics of education claim that new job entrants lack basic competencies in reading, writing, and math or need better "generic" skills—problem-solving, teamwork, communication—to succeed in the workplace. For these groups, integration would improve basic skills and would move the curriculum in ways that will enhance generic workplace skills (Bailey, 1989; Stasz and Grubb, 1991; Stasz et al., 1990; Schmidt and Jennings, forthcoming; Resnick, 1987a, 1987b).
- **Inability to apply knowledge.** Students increasingly lack the ability to draw on theoretical knowledge to solve workplace problems—didactic teaching methods have left many ill-prepared. Research in cognitive science suggests that most students learn better when abstract or theoretical concepts are taught in an applied way. Models of "cognitive apprenticeship," drawing heavily on studies of traditional apprenticeships, recommend "situating" learning in contexts that reflect how a skill will be used (e.g., Collins, Brown, and Newman, 1989; Raizen, 1989; Berryman, 1991; Benson, 1991; Scribner and Martin, 1991).
- **Lack of engagement.** Many students have dropped out of school, either physically or psychologically, because didactic teaching methods do not match their learning styles.

[1]These views are presented in several reports from the National Center for Research in Vocational Education (NCRVE), Berkeley, including Bailey, 1990; Beck, 1990, 1991; Benson, 1991; Copa and Tebbenhoff, 1990; Raizen, 1989; and Schmidt and Jennings (forthcoming). Similar reasons for integration are mentioned by school-level practitioners (e.g., Grubb et al., 1991a).

Traditional classroom experiences have left many students bored and unable to see the benefits of schooling. Some argue that more practical, hands-on pedagogical practices would motivate students toward greater learning by showing them the connections between schooling and real life (e.g., Collins, Brown, and Newman, 1989; Raizen, 1989; Berryman, 1991; Benson, 1991; Scribner and Martin, 1991).

- **Poor school transition.** Some groups worry that students graduate from high school unprepared for the transition to college or the work world. High school graduates lack knowledge of careers, college options, and job search strategies. Integration is seen as a means to increase knowledge and skills that will aid students in transitions from high school (William T. Grant Foundation, 1988; National Center on Education and the Economy, 1990).
- **Negative effects of tracking.** Others are concerned that the current system of tracking—the separation of academic and vocational students into separate education programs—systematically denies some students the benefits of a good education by shifting them into curricular programs (general and vocational tracks) that have weak curricular content. Supporters see integration as the means to increase the rigor of curriculum so that all students will be better served (Benson 1991; Schmidt and Jennings, forthcoming; Beck, 1990; Oakes et al., 1990, 1992).

As this list illustrates, supporters of integrating academic and vocational education have many reasons for embracing it. However, few of these supporters have articulated their views in ways that might lead to designing instructional programs. Views about the potential benefits of integration for solving specific problems remain largely hypotheses about expected outcomes that have not been adequately verified by evaluation of specific integrated programs.[2]

THE FOUR THEMES OF INTEGRATION

We have synthesized four themes from the literature review that we think uniquely define integration as a reform. These four themes are described below.

Richer, More Coherent Curricula

Integration is intended to improve curriculum content in two ways: by enhancing the academic and generic skills content of courses and by linking courses in coherent sequences that may be related to broad occupational clusters. Enhancing course content would increase students' ability to use higher-order thinking skills in practical applications. Within courses, curriculum changes might lead to a shift away from teaching specific facts and procedures to teaching generic skills, including complex reasoning abilities and widely useful attitudes and

[2]We note some exceptions here. David Stern and his colleagues (1989) have evaluated the California Peninsula Academies. For NCRVE, Jerry Pepple (1991) has evaluated the Center for Occupational Research and Development (CORD) applied academics curriculum. These evaluations are an important first step toward demonstrating the hypothesized efforts of integrated programs, but they represent only two types of programs in a small sample of schools. Similarly, cognitive scientists back their view with a strong research base but have not extensively evaluated their instructional recommendations in the context of integrated programs.

work habits (Stasz et al., 1990). Linking across courses could prevent students from "milling around," taking unrelated courses.

More Activity-Based Pedagogy

Integration is proposed to improve the teaching of all subjects by replacing didactic classroom instruction with activity-based instruction that links abstract concepts with real-life events and the solving of useful problems. Changes in pedagogy involve modifying academic teaching methods to draw on strengths generally associated with vocational instruction and vice versa. Favored pedagogical techniques in vocational courses include project-oriented methods, student-initiated activities, group work, teaching of abstract or general principles in the context of specific applications, and an emphasis on tutoring or apprenticeship methods rather than lecturing (Stasz and Grubb, 1991; Collins et al., 1989). From the academic side, integration reform favors greater emphasis on writing, use of focused discussion, and the "whole language" principle of exploring several representations of a single idea (e.g., through projects that incorporate written, oral, and physical components) (Adelman, 1989; Grubb et al., 1991b).

More Teacher Collaboration and Coordination

Curriculum and pedagogical changes are expected to be supported by new relationships between academic and vocational teachers that foster the exchange of knowledge and lead to improved communications between disciplines (Adelman, 1989; Grubb et al., 1991a; Little, 1982; Little and Threatt, 1992). Coordination and collaboration between academic and vocational teachers will be provided through activities such as teaming, joint curriculum development, joint planning, and classroom observation.

More Attention to School Transition

Integration aims to improve the practices of high schools that enable students to make the transition from high school to further education and productive careers (Benson, 1991; Grubb et al., 1991a). Providing better counseling, increased career planning, and job experiences in high school would prevent students from experiencing long lapses between graduation and employment or wasting time pursuing careers for which they are ill-suited. Integration sometimes translates into changes in counseling, career exploration, increased career information and planning, and even changes to credentials or certification.

INTEGRATION IN PRACTICE

Adelman (1989) and Grubb et al. (1991a) observed that, for the most part, integration has been undertaken by vocational schools that are facing falling enrollments and trying to improve their course offerings. Because of the long-standing separation between academic and vocational education in this country, integration has often been understood as primarily an attempt to reform vocational education programs—for example, by adding academic competencies or courses to the vocational education curriculum or smoothing the transition from school to job (Grubb et al., 1991a).

The above discussion focuses on integration's unique aspects, but when implemented in an existing high school, integration is likely to precipitate changes in other aspects of schooling. For example, some schools attempting integration have changed their organizational structure in significant ways. Some have abandoned the traditional department structure in favor of broad organizational clusters encompassing a variety of related occupations—such as health occupations or transportation—which house both vocational and academic teachers. Others, such as the "academy" model, are organized as schools-within-a-school (Stern, 1990). Integration reform often includes shifts in the balance between academic and vocational teachers within the school or delegation of authority over curriculum from central offices to teachers at the sites. Whatever these other changes might be, they have not been identified as unique to integration or as a part of the core concept. Nevertheless, as schools have implemented integration, such changes have been observed.

Whether states and localities begin with simple changes or more complex reforms, development of integrated vocational and academic programs is a lengthy, dynamic process. Reform in one area—for example, a curricular change such as the adoption of applied academic materials—can provide a starting point for reforms in other areas, such as pedagogy or school transition. Schools that are just beginning to implement integration might not see the fruits of their labor for several years.

COMPETING REFORMS

Integration is by no means the only reform being considered to improve high schools. Many of the other reforms do not conflict with integration per se—for example, there is no reason to expect that reforms aimed at restructuring schools would conflict with integration (Hill and Bonan, 1991; Chubb and Moe, 1990)—but those that focus on curricular improvements may offer conflicting notions of course content. The contribution of vocational education and its place in the high school curriculum has been questioned by those favoring a return to a more classical education with a heavy emphasis on academic courses (Bennett, 1987; Hirsch, 1987).[3] These concepts have been promoted in a less extreme form by the Coalition for Essential Schools (CES), which promotes academics in the liberal arts tradition. While the proponents of liberal arts education disagree with integration proponents about course content, it is less clear that they disagree on matters of pedagogy and the need for workplace skills. Both the liberal arts proponents and the integration proponents favor concepts of hands-on activities, self-paced learning, cooperative learning, and understanding of technologies and their place in the world. Many new state-sponsored education reforms favor the integrated model over the liberal arts model (e.g., those in California and New York).

It is not our purpose to determine which approach is ultimately better for students. Rather, this study focuses on one approach that finds wide support in policy and practice.

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[3]Integration has also been challenged at the college level (*California Community College Handbook*, 1991).

3. CONCEPTUAL FRAMEWORK AND CASE-STUDY METHODOLOGY

CONCEPTUAL FRAMEWORK

A large literature exists on school reform efforts and implementation of educational policies in local settings. From this literature we draw two assumptions that guide our data collection and analysis.

First, high schools are complex organizations with many interacting clusters of activities such as pedagogical practices, curriculum and textbooks, student assignment practices, and budget practices (Bidwell, 1965; Goodlad, 1984; Weick, 1976; Wilson, 1989). Goodlad (1984) refers to these clusters or components as the school commonplaces, noting that they are common to schools even though each commonplace might manifest itself differently in different schools. Changes in one commonplace, such as pedagogy, are likely to cause changes in others, such as budgeting of staff resources and the assignment of students. To understand the full character of a reform and how it is implemented, one must study all the aspects of the school at which it is implemented. This is necessary because the particular focus of the reform—for example, a change in curriculum—may interact with other components of schooling to redefine the organization. This assumption is supported by the literature on integration, which indicates that although integration might focus on the four themes discussed in Section 2, schools undertaking integration changed other commonplaces as well (Adelman 1989; Grubb et al., 1991a).

Second, schools exist and function in a complex policy environment that affects them both directly and indirectly (Berman and McLaughlin, 1975; Gross, Giaquinta, and Bernstein, 1971; Deal and Nutt, 1983; Firestone, 1980; Metz, 1986; McLaughlin, 1987; Weatherley and Lipsky, 1977). Reform efforts must be accomplished within this environment. Many studies have documented the weak or unanticipated effects of policy on practice. Evidence from these studies indicates that school practices cannot be understood separately from the policy environment that shapes them. Furthermore, the boundaries between policy and practice are often blurred (Appleby, 1975; Barr and Dreeben, 1983), and fine distinctions between them can seldom be drawn.

Richard Elmore (1979) acknowledges the primacy of policy and practice in understanding school reform. He designed a policy analysis approach that he calls "backward mapping." This approach calls for an embedded case-study design with the school as the unit of analysis. From the school, the research then traces the effects of policy up the levels of government. This approach is suited to our purpose of understanding what integration is in real school settings and how it changes schools.

The complex picture of integration within the current policy setting and existing separate academic and vocational practices (commonplaces) is illustrated in Figure 3.1. Our task was to document how schools attempted to implement the four themes of integration reform. We looked at how other clusters or components changed as a result of efforts to implement these themes, thus defining the empty set in the center of Figure 3.1. In addition, we tried to understand how the policies at the state and local levels shaped the ways schools accomplished integration.

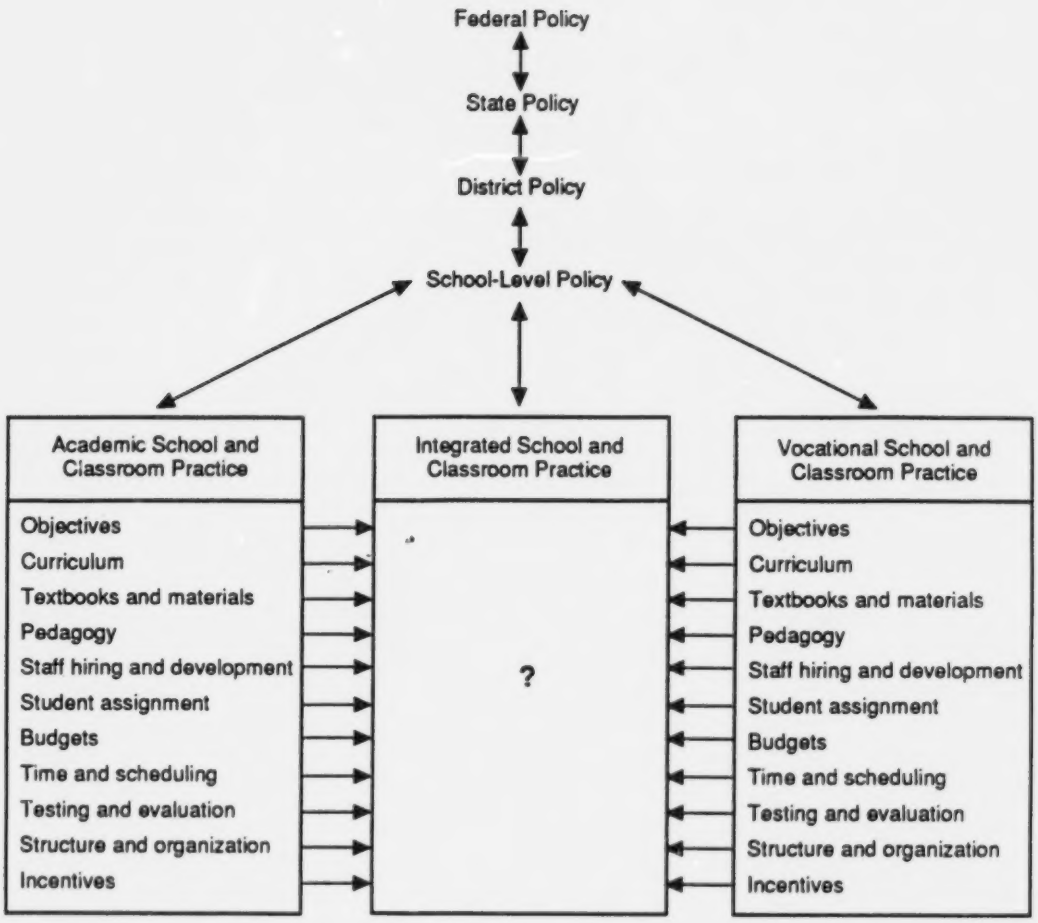

Figure 3.1—Policies at All Levels Can Support or Hinder the Integration of Academic and Vocational Education Practices

To aid in tracking the interactive effects of the reform and the policy environment, we used two existing typologies. First, we used Goodlad's (1984) description of school commonplaces to track all the changes to differing sets of clustered activities within the schools studied. These commonplaces include educational objectives, curriculum, pedagogy, and textbooks and materials. They provided a systematic way to collect data and compare changes across schools.

Second, we used the typology of policy types of McDonnell and Grubb (1991) to track the policies that affect integration:

- **Mandates:** Rules governing the action of individuals and agencies, intended to produce compliance.

- **Inducements:** The transfer of money to individuals or agencies in return for certain actions.
- **Capacity-building:** The transfer of money for the purpose of investment in material, intellectual, or human resources.
- **System-changing:** The transfer of official authority among individuals and agencies to alter the system by which public goods and services are delivered.

STUDY DESIGN AND CASE SELECTION

Because we wished to understand integration in actual school settings we chose a case-study design. Moreover, to understand the interactions between policy and practice we chose an embedded case approach which required collecting data from state, district, and local policymakers. We knew from our literature review that integration was an evolving practice, with different sites taking different approaches. Thus, we chose a replicated design to learn how integration differed among schools. Because integration is evolving, our cases had to cover previous years at a site, starting when the site initially undertook integration. This also indicated a longitudinal approach. In two consecutive years, we visited each site during the spring for two to three days. During the first visit we collected information about the previous years of the integration attempt. On the second visit, we collected data about what had transpired over the past year, as well as future plans.

We selected our potential sample from schools that other researchers had identified as having attempted integration. Adelman (1989) and Grubb et al. (1991a) provided a fairly comprehensive review of integration programs in several states. We used two criteria to reduce the sample. First, we asked other researchers for nominations of programs that had actually been able to establish changes in the four themes of integration. Several sites that had only begun efforts or had been completely unable to accomplish site goals for integration were rejected as candidates.

Second, we wanted to understand how the variance in policy environments might affect school-level integration programs. This translated into choosing sites from different states with different policies that affected academic and vocational programs and choosing sites with different relationships to their governing districts or states. These selection criteria did not eliminate vocational schools, mission schools, schools without vocational offerings, or comprehensive high schools from the study.[1] Several of each type of school were included in the sample. In this way we could understand whether integration was solely a vocational reform or whether it might be usefully applied to other types of programs.

At the time of our study, only one state, Ohio, had promoted integration. Ohio used a mandate, and sites across the state were implementing this mandate. We chose three sites from Ohio to examine the differences between localities, given a single mandate. We think these sites hold lessons for those states inclined to implement the Perkins amendments through top-down means.

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[1] *Vocational* high schools are those that provide primarily vocational courses and graduate students prepared for occupations. *Mission* schools are those with specialized programs of study, for example, an emphasis on science and technology. *Comprehensive* high schools offer both vocational and academic programs and prepare some students for immediate transition to work and others for transition to college.

The eight sites chosen had differing background characteristics, as shown in Table 3.1.[2] The sample included comprehensive high schools, vocational schools, and mission-oriented schools. Two schools were located in urban surroundings, four were in suburban areas, two were in rural areas. Half of the sites served only eleventh and twelfth graders; the remaining sites served at least three grade levels. Some featured specialized curricular programs, others did not. Two sites selected students based on performance criteria; the others had nonselective enrollments.

The sample schools ranged in student enrollment from 70 to 2,500. The sites also varied in the dates on which they undertook integration, with one having attempted it as early as 1982. A synopsis of each site appears in the appendix.

CASE-STUDY PROCEDURES

To obtain the data needed to track the integration process and determine the influence of key variables, we gathered evidence from multiple sources: background documents, integration plans, interviews with participants in the integration efforts, and classroom observations.

First, we gathered written evidence of practices and policies affecting integration. We collected state education plans, recent changes to state or local education policies, state or local documents which described policy problems and proposed solutions, state- and district-level data on school inputs and outcomes, and documents concerning course content. We collected school-level data from mission statements, descriptions for accreditation, school improvement plans, graduate surveys, documents concerning course content, changes to the master schedule, and, when available, lesson plans for specific classes.

Second, we conducted a series of interviews at the state, district, and school levels to gather participants' views of integration practices, policies, and implementation experiences. For each site we interviewed administrators (at all three levels), teachers, students, and members of the local community:

- State level
  - The state associate superintendent for curriculum or a staff member
  - The state director of vocational education and two or three staff members
- District level
  - The district superintendent, general education administrator, vocational education administrator, and/or members of their staffs
- School level
  - The school principal and two to three administrators
  - A representative of the guidance department
  - Five to twenty teachers directly involved in integrated classes[3]
  - Five to twenty students at each school, in groups of two to five[4]

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[2]The names of sites are pseudonyms used to protect confidentiality.

[3]These included both academic and vocational (or technical) teachers at all sites. The number interviewed depended on the number of teachers involved in the integration activity. Some of these were group interviews, e.g., when the school used teams of teachers to implement integration.

[4]These interviews were conducted as focus groups or informal discussions concerning why the student had chosen the program, how it differed from other school experiences, and positive or negative views of that experience.

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Table 3.1

Sites Vary by Background Characteristics

Site/State	Location	Grades	Enrollment	Curricular Emphasis	Relation to District	Date Integration Initiated	Student Selection Criteria
Inverness, CA	Suburban	11–12	40–70	Science and technology academy	School-within-a-school	1987	Middle third
Yardley, CA	Suburban	10–12	1,500	Comprehensive	Single high school in district	1985	None
Franklin, KY	Urban	9–12	1,155	Comprehensive	One of many high schools	1990	None
Glendale, OH	Suburban/rural	11–12	2,500	Vocational	Area vocational district	1982	None
Markham, OH	Rural	11–12	1,770	Vocational	Area vocational district	1986	None
Warwick, OH	Rural	11–12	700	Vocational	Area vocational district	1989	None
Bradford, OR	Urban	9–12	1,600	Vocational	One of many high schools	1986	Middle third
Johnson, VA	Suburban	9–12	1,600	Science and technology	One of many high schools	1985	Upper third

- Local community
  - Community members involved in school partnership associations with integration
  - Business representatives, community college representatives, and elected school board members

At two sites, we interviewed the state-level administrators only once, and at one site we interviewed all participants only in the last year of the study.

The interviews were semistructured by a protocol, but questions tended to be open-ended, enabling us to pursue emerging issues. The average interview lasted one hour. The protocol was designed to cover the formulation and implementation of the integration effort, problems that arose, and efforts to overcome those problems. Questions varied by the organizational level of the respondent. Perhaps most important, the protocol included a listing of the school commonplaces with questions concerning what had changed as a result of or in conjunction with the integration effort.

Finally, we observed three to ten classes at each school. These observations were not systematic. We used them only to get a general impression of the content and conduct of the class, the students served, teaching practices, and so on. They did not provide systematic information on teachers, students, or classes.

THREE APPROACHES TO INTEGRATION

Analysis of the data collected from our eight sites showed that the sites tended to cluster into three approaches to integration, as shown in Table 3.2. The sites representing each approach have similar contextual features, e.g., backgrounds, goals, and policy environments, as discussed below.

We describe the three approaches as a prelude to presenting more detailed material about how schools changed to incorporate the four themes of integration. The name we assigned to each approach reflects the major goal of the integration efforts at its sites. The enhanced academics approach is associated with vocational schools that attempted to increase the academic content of their vocational courses for students training for specific occupations. The enhanced relevance approach is associated with specialized schools that attempted to make their academic, vocational, and technical curricula have more practical relevance to students going on to college or planning to join the high-paying workforce. The enhanced engagement approach is associated with comprehensive schools facing poorly motivated teachers and students; these schools were attempting to increase their engagement in schooling through organizational changes that were to eventually lead to new curricula and pedagogy.

The Enhanced Academics Approach

The enhanced academics approach was taken by three vocational schools in our sample, the Ohio schools. These schools generally served students with average or below-average educational attainment. Students attended these vocational schools during their eleventh and twelfth grades; they were sent from "home" comprehensive high schools that served academic or general-track students. (The vocational schools were centralized so that they could serve students from several "home" districts.) The purpose of these centralized schools was to train

Table 3.2

Sites Represent Three Approaches to Integration

	Enhanced Academics	Enhanced Relevance	Enhanced Engagement
Sites	Glendale, Markham, Warwick	Bradford, Inverness, Johnson	Franklin, Yardley
Population served	Vocational education	Selected students	All students
Goal	Increase academic content	Prepare students for career	Reengage students
Change vehicle	State mandate	School improvement plan	District and school improvement plan
Approach	Adopt state curriculum and teacher assignment guidelines	Experiment with curriculum and pedagogy	Organizational changes to bring about reform
State/local relationship	State control	Local autonomy	Local autonomy

students in specific occupations and to help them transition immediately to jobs or further postsecondary education and training.

In the early 1980s, the Ohio state vocational education division faced many concerns. It surveyed both graduates of the vocational schools and businesses where vocational graduates were placed and found that the graduates were not adequately prepared for the workplace: They lacked basic academic skills, could not always communicate effectively with their coworkers and customers, and lacked the ability to apply their high school experiences to practical problems in the workplace. Total high school enrollments were falling, and the state feared that vocational enrollments would fall more precipitously. It was believed that vocational education might become less attractive to students because new state graduation requirements made it difficult for vocational students to both complete the requirements and take their vocational courses. State policymakers thought that increasing the academic content of vocational courses would address both problems, increasing the skills of the students and also encouraging enrollment by permitting academic credit to be offered.

In the mid-1980s, the State Department of Education (SDE) mandated that vocational schools and programs in Ohio adopt its "Applied Academics" (AA) program to stop falling enrollments in the vocational schools and to respond to business concerns by producing vocational graduates with more academic skills.[5] The SDE directed the vocational schools to enhance the academic content of their programs by adding AA classes. It also required that these classes be taught by academically certified teachers. The state provided few funds for

[5]One common approach to curricular enrichment, observed by Adelman (198?) and Grubb et al. (1991a), is the adoption of applied academic courses, either by investing in "off-the-shelf" curriculum materials (e.g., Principles of Technology (POT), Applied Mathematics, and Applied Communications) developed by existing educational publishers such as CORD or by developing their own. CORD and AIT (Agency for Instructional Technology) are nonprofit organizations that have developed "applied" curriculum packages used in many schools. NCRVE's Survey of Vocational Education in the Fifty States (McDonnell and Zellman, forthcoming) indicates that 34 of the 45 states responding have invested in off-the-shelf applied academic materials. Adopting these materials can involve a major effort on the part of teachers, who must not only learn them but must also adapt them to suit their local needs.

this effort. It had invested in the CORD materials and recommended that sites use these as a starting point for integration. It also provided some workshops to help teachers and administrators understand what its program was supposed to accomplish. Finally, it provided some implementation guidelines.

While these schools tended to be responsive to state directives, they varied in some particulars. Depending on their local conditions—resources, plans, leadership, and the capabilities of their administrators—the sites progressed at different rates toward the state requirements.

Glendale initiated its integration efforts prior to the state mandate as part of a self-initiated school improvement process. It sought increased local funding to support the effort and undertook major improvements, beyond what the state required, to its vocational and academic curricula. Integration was planned as part of a five-year effort to improve the school. The school was staffed by progressive administrators who had led it through other changes in the past. It also had excellent administration/teacher relationships. The teachers were not members of a union. Integration efforts included the formal documentation of the new curricula and new evaluations for teachers' performance, evaluations aimed at changing teaching practices and pedagogy.

The other two schools, Markham and Warwick, initiated integration in response to the state's mandate. Markham had been plagued by strife between teachers and administrators, and the teachers union had been leading efforts to protect teachers' jobs in the face of falling enrollments. Warwick had been administered by a rather noninnovative team prior to the integration mandate. It experienced a major turnover in its administration just prior to the integration effort and undertook the effort with two new administrators and a newly created union. Neither school raised local funding to meet the needs of integration reform.

The Enhanced Relevance Approach

Three of the schools in our sample followed the enhanced relevance approach. These are mission schools which specialize in science and technology subjects. They serve academically well-prepared students bound for college or high-paying jobs, either because of selective enrollments or because of the demographic characteristics of the areas in which they are located.

While the students graduating from these schools are well-prepared academically, local policymakers were worried that they did not have the practical skills relevant for their futures. Administrators at these schools are familiar with the current literature on future job-skills needs, and some of them said they were influenced by business surveys. They felt that their students needed more experience with the practical application of theory to common problems. Using school improvement plans as a vehicle for change, these schools attempted to enrich the curriculum to include theory, application, and practice to better prepare students for demanding future careers.

These schools did not have mandates to integrate; instead, they had considerable school-level autonomy to experiment. Either because of their mission focus or because of their status as model schools, they operated in environments of reduced state or district curriculum controls. Allowed to change substantial parts of curriculum and pedagogy, the schools approached in-

tegration as a series of experiments. They instituted pilot programs or schools-within-schools to test new ideas. These efforts were funded by existing budgets at one school and state grants at two others.

However, the schools varied in their particulars. Bradford is a four-year technical school that draws students from the surrounding district through a selective enrollment policy. It offers vocational courses, but as part of a school improvement program, it had clustered fourteen vocational programs into seven broader occupational areas. It was moving away from specific occupational training toward a more general understanding of "systems" concepts and their application. Bradford graduates typically go on to college, further technical training, or the workplace.

Johnson is a science and technology school that draws students from the surrounding district through a selective admissions policy. It had invested in excellent technology labs, designed to broaden its students' understanding of science concepts, but it offered no vocational programs.

Inverness is a separate "technology academy" housed in a comprehensive high school. It serves 40 to 70 students, selected for their technical aptitude or interest. These students receive practical, technical experiences as part of their college-going preparation, including work internships at local firms.

Of the three integration approaches identified in this study, the enhanced relevance sites offered the most extensive and innovative practices. However, discussion with state and district administrators for these programs indicated that the integration experiences of these schools were seen as outside of the norm; the administrators believed that the schools were able to accomplish what they had because they were "special." Therefore, it is not surprising that the administrators do not look to these schools for lessons on what integration means or how to implement it.

The Enhanced Engagement Approach

The two remaining schools used the enhanced engagement approach. Both are comprehensive high schools, with vocational and academic programs, serving a diverse student body. The student bodies at these schools did not, as a group, exhibit strong academic performances. State and local administrators were generally concerned that students lacked basic academic skills and were poorly motivated to complete schooling. In addition, some teachers appeared to be disengaged from teaching. The goal of the integration effort was to reengage students in schooling through sweeping organizational changes that would narrow the divide between the vocational and academic sides of the school. It was thought that these organizational changes would eventually lead to changed curriculum and pedagogy.

State and local initiatives emphasized site-based management in which teachers could be involved in decisions regarding curricula and pedagogy. Therefore, the state and local governments provided little guidance in these areas. The sites applied for grants to aid in their efforts.

School administrators and teachers thought school organizational changes were a prerequisite to curricular reform. While integration was the goal, the initial focus was on providing teachers with more decisionmaking authority. These schools made much slower progress to-

ward curricular and pedagogical reform than the other schools. However, their staffs believe that they have fundamentally changed the school structure in a way that will facilitate substantial long-term changes that underlie integration, bridging vocational and academic education through a focus on careers or occupations.

These two schools also varied in their particulars. Franklin is located in a state and district that led the nation in site-based management reforms. It experienced no deliberate efforts to hinder school-level change. However, the state and local governance changes came so swiftly during implementation that it became difficult for the school to sort out its priorities and maintain steady progress. In addition, it tried many other reforms. To accomplish integration it aligned itself with the Southern Regional Education Board (SREB) effort and relied on the SREB for curricular support. Grant money was obtained for this purpose.

Yardley obtained a "model school grant" from the state. Since the state was not in the midst of a site-based management effort, Yardley was considered a pilot for this type of activity. The major change was the reorganization of teachers into a matrix of traditional departments and occupational clusters.

Importance of the Approaches

In succeeding sections of this report we organize our findings from the case studies according to these three integration approaches. While the approaches offer a way to organize sites around policy contexts and integration reform goals, they should not be taken as "models" for reform. Rather, some problems and solutions are common to all sites and across all approaches. In the following sections, we explore how schools following these approaches attempted to accomplish the different themes of integration, noting differences among approaches and elements common to all sites.

4. CURRICULAR AND PEDAGOGICAL REFORM

Two major goals of integration are to reform the high school curriculum and pedagogy. To do so may require new organizational forms intended to alter students' learning environments, as will be apparent in the program descriptions that follow. Irrespective of organizational changes, however, integration requires changes in teacher behavior that can transform what happens in classrooms.

Three kinds of curriculum changes, predicted by theory and observed in practice, characterize potentially integrated programs:

- **Increased knowledge and skills.** Integrated curricula can increase the academic and vocational content in courses and improve students' ability to apply theoretical concepts to real-life problems and to engage in complex problem-solving.
- **Improved course alignment and content connections.** Integrated curricula are horizontally or vertically aligned. Vertical alignment arranges courses in a coherent sequence, usually related to broad occupational clusters, to reduce the tendency of students to "mill around" and take unrelated courses (Grubb et al., 1991a). In horizontal alignment, courses are offered simultaneously and specifically show the application or relationships of one domain to the other (e.g., mathematics to interior design). Both forms of alignment can change course content and course scheduling.
- **Improved workplace-related knowledge, skills, and attitudes.** Integrated curricula can enhance students' preparation for work by providing knowledge about work, improving work-related dispositions, and providing job-related skills and experiences such as vocational labs, senior projects, and internships.

Activity-based teaching is intended to support these curriculum goals by improving students' ability to make connections between the theoretical and the practical and by motivating students to greater learning. It might enhance both academic and vocationally oriented skills. Typical practices include (1) hands-on problem-solving, (2) cooperative or team-based activities, (3) lessons that require the use of different forms of expression, and (4) project work that requires students to apply knowledge and skills from several domains to produce some product (e.g., research reports, physical models).

Activity-based learning requires teachers to adopt new roles (e.g., coach, facilitator, or guide) and teaching practices (e.g., one-on-one tutoring, modeling, demonstration). These roles and teaching practices are often more characteristic of vocational teachers than of academic teachers (e.g., Collins, Brown, and Newman, 1989; Stasz et al., 1990).

The remainder of this section examines the curricular and pedagogical practices adopted by the schools (summarized in Tables 4.1 and 4.2, respectively) and the policy actions taken by the sites and higher institutional levels (Tables 4.3 and 4.4) that shaped these practices. The section is organized by groups of schools using similar integration approaches. We recognize that developing integrated curricula along the lines discussed above also requires new collaborations between teachers. The nature and extent of these collaborations and the policies that support them are discussed in Section 5.

Table 4.1

Curricular Integration Practices by Integration Approach

Approach/Site	Actions to Increase Knowledge and Skills	Course and Content Alignment	Actions to Improve Workplace Skills
Enhanced academics			
Glendale	Increase academic content through AA; upgrade vocational curriculum	Horizontally aligned AA with occupational content	Require employability courses
Markham	Increase academic content through AA	Horizontally aligned AA with occupational content	Require employability courses
Warwick	Increase academic content through AA	Horizontally aligned AA with occupational content	Require employability courses
Enhanced relevance			
Bradford	Adopt POT; drafting and computers required; technical writing and communications in vocational areas	Horizontally aligned English and vocational curriculum; vertically aligned four years of vocational experience	Senior projects piloted; career plans
Inverness	Technology integrated with math, English, and science; adopt POT	Horizontal alignment	Provide internship experience as required curriculum
Johnson	Increase applied learning; integrate theory and practice	Horizontally aligned pilots; vertically aligned four-year sequence of math, science, and technology	Project-based work in community settings; senior projects
Enhanced engagement			
Franklin	Increase academic content and practical understanding through applied academics	None	Career plan
Yardley	No change	None	Career research and plan

CURRICULUM AND PEDAGOGY AT ENHANCED ACADEMICS SITES

The enhanced academics sites all used a similar approach to curriculum and pedagogical changes due to the state mandate under which they operated. We first discuss the state mandate and its policy supports and then examine how sites accommodated their practices to the new requirements.

The State Mandate

The primary intent of the Ohio mandate was to increase the academic content in vocational education programs. Prior to the state mandate, vocational students were thought to be receiving minimum amounts of academic content, partly because of the inability of many voca-

tional instructors to teach academic material.[1] Existing student academic skill levels were thought to be minimal, with many students entering the vocational programs below grade level in math and reading. The AA model required by the SDE was intended to increase the basic competencies of students in communications, math, and science.

The SDE's AA model required all sites to increase academic content in two ways. First, it required math, science, and communications to be taught in separate courses and in an applied manner. Formerly, this content, if covered at all, was taught as part of vocational labs or in "related" periods by vocational teachers. Under the new model, it was to be taught separately from the labs, and applied materials were to be used.

Table 4.2

Activity-Based Learning Practices by Integration Approach

Approach/Site	Hands-On Activities	Cooperative Learning or Group Formats	Multiple Modes of Expressions	Labs/Projects
Enhanced academics				
Glendale	Normal in vocational classes	At discretion of teacher	Oral presentation in applied communications	No change
Markham	Normal in vocational classes	At discretion of teacher	Oral presentation in applied communications	No change
Warwick	Normal in vocational classes	At discretion of teacher	Oral presentation in applied communications	No change
Enhanced relevance				
Bradford	Increased in articulated classes	Group projects; schoolwide emphasis on cooperative techniques	Journals; oral presentation	Job research; class projects; normal in vocational classes
Inverness	Increased in all classes	Group projects	No	Technology labs; internships
Johnson	Increased in academic classes	Group projects; school level emphasis on cooperative learning	Journals; oral presentation	Senior projects; class projects
Enhanced engagement				
Franklin	Normal in vocational classes; increased in applied academics	School level emphasis on cooperative learning	Oral presentation; writing assignments	No change
Yardley	No change	At discretion of teacher	No	Career-search paper

[1]Vocational teachers' preparation differs from that of academic teachers, and many do not have backgrounds that prepare them for teaching academic content, e.g., they may not have an undergraduate degree in an academic discipline. Without that background, vocational teachers cannot be certified to teach academic courses.

Table 4.3

Local Actions to Foster Curricular and Pedagogical Integration Reforms

Approach/Site	Capacity-Building	Structural/ Decisionmaking	Personnel Changes	Teacher Inducements
Enhanced academics				
Glendale	Teaming; joint planning periods; summer workshops	None	Increased AA teachers	Summer pay provided; evaluation criteria changed
Markham	Teaming; joint planning periods; summer workshops	AA teachers assigned to departments	Increased AA teachers	Summer pay provided
Warwick	Teaming	None	Increased AA teachers	None
Enhanced relevance				
Bradford	Teaming; teacher coordinator; summer workshops	Teachers put on steering committee; teacher writing groups created	Teachers who support reform hired	Summer pay provided
Inverness	Joint planning periods; teaming	Academy created	Teachers hired for academy	None
Johnson	Teaming; joint planning period; summer workshops	Pilot teachers decide on curriculum	Teachers with multidisciplinary and practical experience hired	Summer pay provided
Enhanced engagement				
Franklin	Summer workshops; inservicing	Staff senate and improvement committees created; teachers make curriculum decisions	None	Summer pay provided
Yardley	Weekly meetings	Teachers reassigned to occupational clusters; teachers make curriculum decisions	None	None

Second, the AA courses had to be taught by academically certified teachers. As the SDE explained, the requirement for academically certified teachers was partially driven by increasing graduations requirements in the state, the need for college acceptance, and falling vocational enrollments. Vocational education courses are electives. With increasing graduation requirements, students lost interest in vocational programs because of the perceived extra workload. If the vocational programs could be assured Carnegie credits and could substitute for academic courses in meeting graduation requirements, it was believed that students would continue to enroll in vocational programs. SDE staff thought that the certification process for academic teachers ensured rigorous academic content for AA courses and acceptance by the general education community.

The decision to use academic teachers to teach AA decreased the number of classes taught by vocational teachers. Their "related" courses were reduced or eliminated. SDE documents

Table 4.4

State Actions That Shaped Curricular and Pedagogical Integration Reforms

Approach/Site	Capacity-Building/ Inducements	Structural Changes	Personnel Rule Changes
Enhanced academics			
Glendale	State invested in CORD materials	None	Mandated academic teachers in AA classes
Markham	State invested in CORD materials	None	Mandated academic teachers in AA classes
Warwick	State invested in CORD materials	None	Mandated academic teachers in AA classes
Enhanced relevance			
Bradford	State invested in CORD materials	Currently undergoing decentralization, but no effect on effort	Mandated academic teachers in AA classes
Inverness	State grant for academy	Currently undergoing decentralization, but no effect on effort	None
Johnson	None	Currently undergoing decentralization, but no effect on effort	None
Enhanced engagement			
Franklin	None	Mandated site-based management plan during integration effort	None
Yardley	State grant for model school	Currently undergoing decentralization, but no effect on effort	None

clearly show that under the new model, schools need fewer vocational teachers to implement AA. Under the old curriculum model, for example, six different occupational programs require six different vocational teachers, each teaching one lab and two related technical periods daily. Under AA, the same six occupational programs require only five teachers—two academic teachers for two AA courses, and three vocational teachers teaching two labs daily. Using simple arithmetic and assuming no other changes, a school's decision to adopt AA means that half of the vocational teachers could soon be unemployed. The SDE promoted AA as providing a fiscal advantage, because the same funding unit pays for improved instruction at lower cost (one less teacher).

The SDE mandate used horizontal alignment to ensure that separate academic instruction would be tied to specific occupational courses being taken simultaneously by the students. For example, the applied math class for dental hygiene students was supposed to use examples from the dental hygiene field to demonstrate math concepts. Likewise, the applied English and science courses were to use applications from the specific occupational areas of the students being instructed.

The structure of vocational education in Ohio supported vertical curriculum alignment before the adoption of AA. Students attended vocational schools to receive job-related training and had minimum course requirements for certification in most areas.

Similarly, because vocational education was organized with separate facilities geared toward vocational instruction, students already had ample opportunity to learn workplace skills in vocational labs. In an effort to encourage better preparation, the state allowed the sites to separate employability and entrepreneur lessons from the vocational labs and to teach them in separate courses. Here, workplace skills such as résumé writing and job interview behavior could be separately addressed. In addition, applied communications classes could focus on teaching job-related communication skills.

The state mandate did not require the teaching of higher-order thinking skills, but it emphasized teaching students the academic skills they needed for job entry. It also did not require an upgrading of the vocational skills taught. The SDE mandate did not mention different pedagogies as part of the AA program (see Table 4.1).

The state guidelines for the implementation of AA noted the need for administrative actions by the sites to support the new curriculum mandate. Most of these actions (see Table 4.4) involved developing new curriculum and materials: staff development activities, noninstructional time to learn the new materials and develop additional ones, and the need for teachers to observe each other. The state recommended that the AA teacher sit in on the vocational lab on a regular basis for several years to promote exchange of materials and practical applications.

The state provided few funds for these activities (see Table 4.4). For several years, it did allocate $4 million per year for staff development at schools undergoing integration. But when the allocation was divided among all the schools, each school received a very small amount. In addition, the state made a capacity-building investment in off-the-shelf curricula developed by a private consortium, CORD. While the state encouraged the use of these materials—Principles of Technology, Applied Mathematics, and Applied Communications—it also encouraged schools to develop additional materials.

By the time of our second visit, the SDE had redefined its initial conception to distinguish two types of AA. Its intent was to gain support in the general education community by showing how nonvocational students can benefit by AA and to reduce the difficulties sites were reporting in horizontally aligning the applied courses with the occupationally specific courses. In the "applied" curriculum, teachers integrate academics with "hands-on" activities or problems which are not necessarily related to a student's particular occupational major. This curriculum is suitable for eighth through tenth graders who have not declared an occupational specialty. In "correlated" curricula, the academic instruction is occupationally specific. The correlated curriculum is equivalent to the AA currently offered to eleventh and twelfth graders. The state now says that the intent of its mandate is not to force specific correlations, but to move schools toward increasing applications and improving basic skills. Sites can now meet the mandate by using the more generic version of AA, which does not require occupationally specific applications.

The SDE hired a third-party evaluator to evaluate the AA programs. However, the evaluator used a national achievement test that did not assess the kinds of skills emphasized in AA classes; that is, the test did not cover what was taught. The state did not release the findings because it felt the test was invalid.

Site-Level Practices and Policy Supports

The sites took several actions to implement the curriculum changes. Some actions directly addressed curriculum and pedagogy, and others changed the learning environment in some other way (see Table 4.3). First, students in occupational areas were grouped together in the AA classes. Second, sites hired academically certified teachers for the AA classes and assigned them specific occupational specialties to develop the required applications.

The initial requirement for occupationally specific content in the applied courses caused significant problems in the schools. All AA teachers reported that they found the state-recommended materials to be too generic—they did not contain the occupationally specific examples initially required by the state for horizontal alignment between the occupational specialty and the applied class. Teachers therefore began to develop materials of their own through collaboration with each other. For example, at one school, the vocational teacher readily admitted that she was not prepared to teach math skills to her dental hygiene students; and the applied math teacher, who was formally trained, admitted she did not know how to teach dental hygiene students in an applied manner. The two worked together to develop a curriculum to teach specific math concepts and problem-solving skills that hygienists might need in their jobs.

While the state did not require changes to the existing occupational skills courses, one of the sites in the sample did upgrade the content of its vocational programs as well as its academic content. At Glendale, vocational course content was examined using a task-and-duty format that provided a logical sequencing of course material over the two-year program.

Although they were not required to do so, two sites, Glendale and Markham, realigned vocational programs into clusters of related programs to further increase the coherency of school offerings.

All sites used a team approach to develop correlated materials. The AA teacher was teamed with his or her occupational area teacher to develop curriculum during joint planning periods, in summer workshops, or before and after school.

According to the teachers, the success of these teams depended on a number of factors: consistent team membership from year to year, notice for courses to be taught, consistent funding and scheduling for the joint planning period, consistent sets of courses. In the worst cases, administrators did not provide consistent courses for the AA teachers from year to year or gave little notice to them concerning teaching assignments. For the affected teachers, the first few years of AA meant a heavy workload of curriculum development activities. They reported a high level of frustration, and it appeared that necessary inducements to keep them motivated were lacking.

In addition, the support for these actions, especially the joint planning period, depended on local revenues. Two of the sites, Markham and Warwick, were particularly short of funds and did not consistently provide for this. As a result, teachers put in extra, unpaid hours to

accomplish integration. After several years, teachers became disgruntled over the poor management at the school level and the lack of funding to support the curriculum practices. The third site, Glendale, had increased its tax levy to provide funds for staff development. Curriculum development was more extensive at this site, since the school had more capacity to respond to the changes. The others missed a capacity-building opportunity to build revenue through the local tax base.

The initial decision to use academic teachers for AA shaped school-level implementation experiences as well. The addition of academic teachers in these schools, coupled with reduced teaching loads and possible job loss for some vocational teachers, greatly affected schools and individuals. Vocational teachers reported feeling threatened by the approach; they felt they were forced to comply or lose their jobs. They had little choice but to put in extra hours to develop new materials. Poor morale resulted at each of the schools, at least for a period of time, while vocational teachers reviewed their options. Some left for private-sector employment.

Administrators and teachers reported feeling sorely tried during this time, especially due to the possibility of layoffs. Many layoffs did occur, but they were not caused by the integration efforts. Vocational enrollments fell dramatically enough to cause layoffs by themselves. As long as teachers recognized that the layoffs were due to enrollment drops, teacher morale remained steady. Thus, the administrators had to emphasize this fact to keep teacher morale high.

Administrators took actions to avoid layoffs due to integration. For example, at each site, vocational teachers were assigned as tutors to students who had failed the state-mandated proficiency exam in academic subjects required for graduation. Teachers, however, questioned whether this was an appropriate assignment, especially in light of the fact that these same teachers were not allowed to teach AA.

In addition, administrators used the employability courses approved and funded by the state as a means to avoid layoffs. Some vocational teachers no longer required because of AA were assigned to teach employability. Some teachers questioned the "value-added" by employability courses. They complained that "employability" overlapped what was already taught in the labs or related periods and that some teachers were misassigned—e.g., the plumbing teacher instructing the secretarial classes on employability. The cases of questionable tutoring assignments and employability courses illustrate the connectedness of different reforms. In these instances, other reform initiatives offered a "safety valve"—a way to maintain jobs for teachers threatened by integration reform. Many respondents agreed that although jobs were saved, the final result was not necessarily positive.

By the end of our first round of site visits, many teachers had become very frustrated with poor support and the fear of layoffs. They reported slacking off on curriculum development efforts because of lack of energy and overwork. But the change in the SDE definition of AA helped ease this burden somewhat and gave support to teachers in backing off from the development effort.

Some AA teachers at the sites, especially at Warwick, appeared to embrace this acceptance by the SDE of more generic AA. Preparations for "applied" courses are easier than for "correlated" courses because teachers do not have to spend time in vocational labs or with vocational teachers to learn occupationally relevant content. Some teachers thought the new

definition would relieve some of the pressure they felt to create occupationally specific applied curricula. However, it also appears to undermine horizontal integration.

In all these efforts at curriculum development, only one school, Glendale, systematically institutionalized the change. The other schools have no established policies for formalizing curriculum materials so they can be shared with other teachers or passed on to new teachers joining the school. Glendale established in its first year of implementing the AA program special curriculum formats to formalize the newly developing materials. It consistently supported the teachers with release time to develop and document the curriculum. It is the only site we visited that is able to transmit curriculum from one teacher to another.

None of the sites changed the testing and evaluation procedures for their students despite the substantial changes in curriculum. However, beginning this year, the state will require competency-based testing, which it will provide. The competency tests will include both academic and vocational components; thus, they will match the curriculum goals better than the current testing methods do.

The enhanced academics schools used no formal staff development beyond state-sponsored workshops for vocational teachers to inform them about AA. These workshops did not address curriculum or pedagogy, but covered only the format of AA courses and the job implications for vocational teachers.

Following the state example, the sites did not implement any consistent pedagogical changes (see Table 4.2). Teachers did not talk about such changes in any consistent fashion, and the schools did not adopt any programs or policies to bring about changes in pedagogy. For example, there was no move toward cooperative learning formats in the schools. Through classroom observation, we noted that some teachers did employ these practices, but no consistent set of practices was used or emphasized. We observed a variety of teaching styles at these schools.

At our last visit, Glendale was beginning to address pedagogy specifically by changing its teacher evaluation guidelines to include techniques such as monitoring guided practice, checking for understanding, asking "why" questions, and providing explanations. These changes are intended to move teachers away from didactic instruction. On the basis of its evaluation, the district has some AA teachers following improvement plans to change their teaching practices.

Each of the sites in Ohio noted a potential problem in implementing an integrated curriculum. Administrators and teachers said that the number of students entering the vocational schools in need of remediation had increased in recent years. Newly mandated state proficiency test results indicated that this trend would continue. Coping with this increased need for remediation drained resources that might be used for integration or slowed efforts in that direction. Sites were just beginning to signal the sending schools that unprepared students would not be able to keep up with the more rigorous AA program.

Our limited observations indicated that AA programs did enhance academic content, but in general, the level taught remained below grade level. Nevertheless, practitioners viewed the change as positive because it did *raise* academic instruction in many courses. For the most part, AA increased integration through horizontal alignment: Classes linked math or com-

munication skills with specific aspects of a student's occupational program. Teachers coordinated their effort to achieve this integration.

CURRICULUM AND PEDAGOGY AT ENHANCED RELEVANCE SITES

Changes in pedagogy and curriculum at the enhanced relevance sites were not the result of mandates, but rather were bottom-up efforts by the schools to improve their own offerings. The curriculum and pedagogical changes were initiated by teachers or administrators who felt frustrated that their students, bound for high-skill or technically oriented jobs, were unprepared for the workplace and unable to make connections between subject matters. Thus, this discussion begins at the sites and moves toward the higher policy levels.

Curricular Reforms

The enhanced relevance schools changed the curriculum in several ways to make it more integrated. They all took a similar approach—the use of pilot programs to test new concepts and then movement toward implementing the approach across a grade level, school, or district. At Bradford and Johnson, the pilots were initiated for a subset of a particular grade level for a year or two before adoption by the entire grade level. In comparison, Inverness placed a group of students into a separate, technology-oriented academy housed within a comprehensive high school. This academy was seen as a pilot for a curriculum that might later be adopted throughout the district.

The first step in the process of change was usually to improve vertical alignment among the courses required for graduation. For example, Bradford reorganized its vocational offerings into a smaller set of clusters (e.g., health sciences, transportation, manufacturing). Ninth- and tenth-grade students were required to "cruise" different aspects of that cluster in six- to ten-week segments. After choosing a specialty within the cluster, students would be provided a sequence in the eleventh and twelfth grades to develop more specific job skills. Johnson instituted a four-year required sequence of English, math, science, and technology courses leading to a senior project based on individual research efforts. At both sites, the curriculum was connected from year to year in a progression toward expertise in particular areas.

The three enhanced relevance sites also attempted to make stronger connections between subject areas taken simultaneously, horizontally aligning the content of the curriculum. For example, Inverness focused on the use of computer and CAD/CAM technology across the math, science, and English curriculum. Bradford focused on the connections between English and occupational areas, requiring correlation between the work done in those areas. Assignments in English moved away from literature toward technical writing, and grading was done jointly by English and technical teachers. Johnson took a similar approach, using different pilots to integrate materials across subject areas. For example, the freshman English, biology, and technology teachers worked together to plan a curriculum that showed the connections between the subjects, jointly grading assignments and using practical projects to demonstrate applications. At Johnson this curricular change was supported by an organizational change: block scheduling of the students so that a three-hour block could be shared by three teachers to develop more ambitious lessons not fragmented into small time slots.

The three sites also provided opportunities for learning workplace skills, through school-based vocational laboratories, internships with local employers, and community-based projects. In each of the schools, these became a central part of the curriculum and were not seen as add-ons for some students. The projects and work-related experiences were planned by the faculty to provide reinforcement and reiteration to the connections between subjects in the core curriculum.

The experiences of these three sites in creating curriculum changes were similar to those of the enhanced academics schools. In conceptualizing their school improvements, they reviewed existing curriculum packages. Teachers accepted the Principles of Technology course in all three schools, adding materials as needed. But other existing packages did not fill the demands for curriculum improvement required by these schools. Thus, the teachers, like those at the directed schools, turned to developing their own curriculum.

Pedagogical Reforms

As summarized in Table 4.2, the enhanced relevance schools emphasized changes from their rather traditional pedagogies to more hands-on activities. Johnson and Bradford issued school-level statements that recognized the importance of changing pedagogy to support the new curricula. Teachers we interviewed talked in terms of learning new practices to teach students in ways that would improve their understanding of the real world. As a group, the teachers consistently indicated both the need to appeal to many learning styles and frustration with old teaching methods that did not enable students to solve practical problems.

The schools deliberately adopted a variety of activity-based learning approaches, particularly at Johnson and Bradford. Hands-on/applied activities and lab projects were evident at all sites. Students at Bradford and Johnson also engaged in collaborative projects to foster cooperative learning, wrote research papers, and completed production projects. While the latter projects (e.g., designing a house) had been a long-standing part of Bradford's vocational curriculum, they were new to Johnson's academic program. Johnson featured the "senior project," which required all students to accomplish an individual research activity that would be judged by both peers and a business representative. The project included both written and verbal presentations as well as a physical product. Bradford was piloting this activity in its health and automotive clusters. The Bradford program also included oral presentations and journal writing as a way to enhance communication skills.

Inverness' activities focused on technology—using CAD computers for math/drafting or word processing to write stories. Its Principles of Technology class was fully equipped and included a variety of laboratory experiences. Although cooperative learning and collaboration were not stressed, we observed several instances where students worked together to solve problems or shared a discovery with others in the class. In addition, students spent part of the day in work internships designed to afford many opportunities for activity-based learning.

Two sites strongly supported cooperative learning formats as part of their school improvement plans. We observed both traditional teachers and teachers who assumed alternative roles (e.g., as coach, facilitator, model). Teachers at Bradford mentioned that the library work associated with students' research projects was a marked change for many vocational teachers, some of whom learned library skills along with the students.

None of the three schools has changed the standard testing regimes used to evaluate students. Students are still expected to pass standard academic tests and routinely do. However, the schools have instituted alternative forms of assessment through the use of portfolio development based on the project work. The projects, starting in the freshman year, as well as the research paper, accumulate into a portfolio that can be used for job or college applications. In particular, the senior project at Johnson, now being implemented at Bradford, requires a different type of assessment, including evaluation by peers and clients.

Effects of Reforms

The enhanced relevance schools' attempts to adopt integrated curricula and pedagogy resulted in more rigorous curricula—well beyond enhancement of basic skills. Since the schools have not systematically evaluated these programs, we can offer little hard evidence of success. Feedback from program graduates at Bradford suggests that students have developed better writing skills needed for college. Bradford students also excel at vocational "Olympics," where teams of students compete in generic (e.g., job interview) and occupationally specific activities. Johnson graduates still score highly on nationally normed tests and are placed in four-year colleges.

Supports of Integration at the Site Level

Perhaps the single most important aspect of policy support for curriculum and pedagogical changes in the enhanced relevance schools was the absence of regulations that prohibited curricular experimentation. Each of these schools had a special mission that set it aside from the norm of schools in its district and state. This special status provided the regulatory environment that permitted change. For example, Johnson is allowed to use textbooks of its own choosing. The texts do not have to come from an approved list, as do those of the other high schools in the district. In addition, Johnson has a license from the state to experiment with any curriculum in science and technology. As long as the pilots included a course in one of these areas, the state permitted the experiment. Bradford had a strong tradition of autonomy and district-level regulations that allowed choice of curriculum content. Inverness was given a license from the district to experiment with curriculum and develop a new model for a specific set of students.

Significant numbers of administrators and teachers at these schools tended to be risk-takers. The missions of the schools provided the vision for improvement, while administrators, without the constraints of regulations, acted to promote experimentation. Administrators let it be known that curricular and pedagogical changes would be welcomed and funded. At Bradford, the principal put it this way: "The only risk to a teacher was if he or she did not make changes. If they did not try to improve they were in trouble. It doesn't matter if they succeed as long as they try."

Like the enhanced academics schools, the enhanced relevance schools used teams of teachers in their integration efforts, but the teams had different membership (see Table 4.3). For example, the freshman pilot at Johnson included biology, technology, and English teachers. The sophomore pilot included the computer applications, chemistry, and trigonometry teach-

ers. At Bradford, the writing teams consisted of vocational and English teachers who collaborated to develop a curriculum for each grade level.

Similar administrative actions were taken to support these efforts. They included summer workshops, joint planning periods, and other paid release time. These activities were funded out of local revenues or special grants for school improvement. As these funds evaporated, the joint efforts at curriculum development diminished.

Barriers to Integration at the Site Level

While the supports for integration were noteworthy at these sites, we also noted several barriers to integration. Of the three schools, only Bradford had formalized the content of curriculum in specific courses. Each of the schools had formalized a sequence of courses, but the content areas in courses at Inverness and Johnson depended on the particular group's proclivities and was not systematically documented. At Bradford, the curriculum-writing teams documented the curriculum and handed it off to the other teachers involved at the same grade level. They also worked to ensure compliance with the new curriculum.

The less-systematic approach taken by Inverness and Johnson resulted in one potential problem: lack of curriculum coherence. At Johnson, for example, teacher participation is optional, and not all teachers choose to become involved with integration. Teachers who do become involved can fail either because the "team" does not cohere and cannot agree on the curriculum or because not enough students sign up for the integrated classes. Thus, integrated classes can come and go, and a student might experience integration as a freshman, then not again until the "senior project," which is required of all graduates. The principal's attempt to require all freshmen to have an integration experience has been met by teacher resistance. Without the involvement of the whole staff, the effect of the innovation on the entire curriculum is piecemeal. It also depends on teachers who are motivated to innovate on their own, as no extra incentive is provided beyond a low-risk environment created by the principal.

At Inverness, development of the classroom curriculum has been hampered by several staffing changes (e.g., three science teachers left in the space of five years) and an unstable organizational environment. In this academy program (Grubb et al., 1991a), scheduling permits regular time for teachers to coordinate the curriculum. However, teacher styles and personalities seem to have hampered efforts to integrate. The "fallback" option has been for each class to focus on integration with technology, as each has up-to-date equipment at its disposal. In addition, the program is housed in a high school where counselors actively undermine recruitment efforts and the administration demands a certain number of students for the program to continue. Because district funding (through a state grant) has ended, the program must attract students to maintain itself through average daily attendance (ADA) enrollments. Low enrollment, staff turbulence, and lack of support at the school level may undermine this potentially effective program.

Many of Inverness' troubles seem to stem from its initial inception. The district curriculum specialist who designed the program was aiming to attract technically "talented" students who were not motivated by traditional instruction. This approach was motivated by her own son's problems in school. Since the district views its students as college-bound, school per-

sonnel and parents view the academy as a "special" program. The academy staff thus has trouble defining itself in ways that attract the needed number of students.

None of these schools has directly supported staff development activities aimed at pedagogical change. As noted in Table 4.3, schools had some discretion in whom they hired, and this increased the likelihood of selecting teachers whose teaching style and pedagogical views meshed with program goals. At Inverness, the academy teachers and the district selected the new teachers. At Bradford, the vice principal admitted that he found ways to "get around" district policies to hire destaffed teachers first, in order to select those most appropriate for his program.

As with the enhanced academics schools, no funds have been set aside by the districts or the schools to evaluate these programs.

Support of Integration at the State Level

The states governing these sites took very little action to promote integration during the time period of this study (see Table 4.4). Although Oregon participated in the consortia that developed the CORD materials, Bradford chose to use only the POT materials. California offered grants to local schools to pilot improvement efforts, but Inverness did not receive this type of grant. However, the existence of this grant program provides some political support for school-initiated reforms, even for nonrecipients. Currently, all three states are undertaking significant restructuring efforts, but these began long after the integration efforts at the sample sites. The effects of these efforts on the sites remain to be seen.

CURRICULUM AND PEDAGOGY AT ENHANCED ENGAGEMENT SITES

The two schools using the enhanced engagement approach are comprehensive high schools that include vocational programs. Their main objective in undertaking integration efforts was to reengage students in learning to encourage more of them to stay in school. Their approach differed from those of the other sites because it focused heavily on organizational restructuring, rather than curricular changes. New collaborative organizations were seen as the means to curricular and pedagogical improvements.

Organizational Reforms Pertaining to Curriculum

The two schools differed in the organizational changes made and their relative emphasis (see Table 4.1). At Yardley, teachers and students have been organized into career paths. Students are placed in paths according to the results of an occupational-interest exercise (called the "I-search") that all students complete in the tenth grade. Horizontal alignment occurs opportunistically, for example, when two teachers decide to team teach or integrate their classes because the changes are scheduled in the same period. In these cases, motivated and talented teachers have developed interesting integrated courses. One teacher has initiated articulation agreements with local community colleges on his own. A district-sponsored initiative, separate from the school's reform plan, has enhanced academic skills in some vocational classes. The most significant change has been in counseling, where student/counselor ratios have been nearly halved (down to 350/1) and counselors focus on serving the "whole

child," including providing career guidance. At Yardley, career path brochures, which outline a sequence of courses for reaching either job-related or postsecondary goals, substitute for a formal "integrated" curriculum. In other words, a coursetaking path has been identified, but the content of the courses has not changed.

While Yardley restructured its staff around occupational clusters, it has not made systematic curriculum changes. Some teachers we interviewed felt that the principal and the state overplayed the reform; these teachers were embarrassed over how little had been accomplished. While many teachers expressed disappointment over the failure of their restructuring efforts to affect the curriculum as they had initially hoped, they were seeking additional state funds for curriculum development. They believed that the restructuring had a positive effect on communication among academic and vocational teachers and that teachers are in a position to work together to achieve curriculum integration. The staff appear to have the momentum to continue, whether or not state funds are forthcoming.

Franklin focused on piloting SREB programs to enhance basic skills in math, science, and English. As part of the school improvement effort, the principal and career counselor applied for and received an SREB grant to pilot the applied academic materials designed to teach basic academic skills in science, math, and communications. This was not coordinated with vocational teachers; applied academic courses were simply added to the curriculum.

The restructuring effort also focused on career development. Students develop individual career plans upon entry into high school. The general track has been abolished, so all students must pick an occupational area early-on. However, these areas are not confining. For example, medical professions include the careers of nurse, doctor, emergency medical technician, x-ray technician, etc. Thus, the areas accommodate both college-bound and non-college-bound students. The school is now in the process of vertically aligning its courses to support the career clusters. Each high school in the area will specialize in particular occupational clusters. Franklin's will be the health and safety field. The curriculum will be aligned into a four-year sequence which will support movement toward expertise in a chosen occupational area.

Pedagogical Reforms

Beyond the "I-search" career-exploration exercise, the curriculum change at Yardley did not increase student activity-based learning. Teacher interviews yielded sporadic examples of some other activities—e.g., writing a résumé for a famous person in history—but these depended largely on teacher initiative. Teachers did not discuss pedagogy or share ideas for activity-based learning exercises (see Table 4.2). Yardley did not change its testing and evaluation regime.

At Franklin, there were increased hands-on activities, particularly in academic classes. While the school emphasized cooperative learning for students, teachers designed cooperative activities at their discretion. Nevertheless, each of the five classes we observed used cooperative learning and group learning formats. Students did not sit alone, but worked in groups with the teachers as facilitators. Science classes had applied labs.

Unlike Yardley, Franklin made significant changes in evaluation practices. Students are now required by the state to develop a portfolio to be used throughout their schooling to

gauge progress and to be used ultimately in the job and college application process. These portfolios contain both physical products and various writing assignments, including three technical research writing assignments that are jointly graded by the English and technical teachers. In classes we observed, technical teachers aided students in generating ideas for these written research assignments from the materials covered in labs.

District and State Policy Supports for Integration

Yardley and Franklin differed from the other schools in terms of policy environment. The two districts supported major restructuring efforts as part of school improvement plans (see Table 4.4). The schools were first expected to restructure to include more teacher input to the decisionmaking process. New teacher-dominated committees would then make curriculum and other school decisions, largely free from district or state regulations that normally confine schools. These teacher-dominated committees abolished the general track in these two schools, set up better career counseling, and began to realign the curriculum. Because of the emphasis on restructuring first, these schools spent a great deal of energy on changing governance structure, rather than concentrating on curriculum. Clearly, these schools were aiming at a broader school improvement effort that has implications for all teachers, students, and programs.

Yardley received a state grant to support its integration efforts. This money was used for equipment, computers, and increasing the counseling staff—not curriculum development. Restructuring reforms were championed by an enthusiastic and dynamic principal who worked to raise funds and support for the school's program. The school has received strong support from the district. State officials praise it as a "model" school.

Franklin worked within a district nationally renowned for its decentralization efforts. It used the SREB grant as one of many experiments with curriculum. Other experiments included teams of teachers assigned to ninth graders to shepherd them through this transition year and provide the individualized support the steering committee felt the children needed. These teams were largely responsible for aiding students in career choices.

Franklin was also supported by other state-level policies. For example, the state has moved away from normed tests to competency-based testing and portfolio assessment. It has removed seat-time regulations and requires that all schools be governed by site-level steering committees which are teacher-dominated. The effects of these changes are only now being felt at the site level. But Franklin is beginning to move toward fundamental reform of the curriculum. Teachers and administrators at the site said that without these confining regulations, they had no more excuses for producing failing students.

The two sites differed in staff development policy, largely as a result of different district-level supports (see Table 4.3). Like other schools in our sample, Yardley had no explicit staff development policy tied to integration. But Franklin did. As part of the restructuring effort, its district had created a centralized staff development function to upgrade all teacher skills. One major district-level emphasis was on cooperative learning. Thus, all Franklin teachers were in the process of attending district-sponsored workshops in cooperative learning. The effects of this were evident at the site. In the five classes observed, each teacher embraced a cooperative learning format.

COMMON ISSUES REGARDING CURRICULAR AND PEDAGOGICAL REFORM

These sites shared several issues regarding the type of practice changes made and the policies that enabled or inhibited change. Because curricular and pedagogical changes can create other changes in the school environment, the issues go beyond curriculum and pedagogy per se.

A central issue in integration at every site is curriculum content. Because instructional time is limited—by tradition as well as state and union regulation—teachers attempting to bring together any two subject domains must struggle to decide what gets left out. Vocational teachers complained that increased academic requirements encroached on training of job-specific skills. Academic teachers supported the idea of vocational students' senior projects but still demanded that those students turn in a final academic paper. Physics and engineering teachers argued over theoretical versus systems perspectives. No matter what the combination of teachers, each teacher began from a position of disciplinary allegiance and expected the others to make accommodations.

This disagreement over content is the result of many different policies and institutions in place today. Academic and vocational teachers have been separately taught and credentialed. Teachers have no past experience in making curriculum content choices. Many look to existing curriculum packages and experts to advise them, but these sources are not always available. We found the fallback position of teachers was to use existing curricula and retreat from innovation when grounds for accommodation could not be found.

Teachers felt unsupported in their improvement efforts, because adequate integrated curricula have not been developed. Although national purveyors of curriculum packages have produced integrated courses and materials, the teachers felt these were not adequate, required extensive supplementation, or required considerable time to learn the materials and practices. In all cases, this translated into the perceived need for better packages as well as teacher release time to assimilate and adapt the materials.

Time and the need for materials translate directly into funding concerns. Evidence from all sites showed that the efforts at integration rose or subsided with the funding available. In all cases, local monies or grants to locals provided the additional funds needed to propel the curriculum improvement effort. When funds subsided, so did the effort. Capacity-building, then, emerged as a central issue.

At all sites, administrators and teachers cited examples of regulations that impeded their efforts at curriculum improvement. While many of the sites had waivers from some regulations, all noted remaining regulations that reduced their ability to make substantial changes. In general, the absence of regulation stimulated innovation.

One frequently mentioned class of regulations was traditional graduation requirements. These impeded reform because integrated courses were no longer defined by subject area. Schools often sought approval for course content from the state to ensure that the new integrated curricula met the graduation standards. Many sites reported that the applied academic courses were not approved by the state or that some difficulties were involved.

While not a regulation per se, college entry requirements presented a similar impediment to curriculum change. These had the same effect as graduation requirements. For example, while Oregon accepted applied academic courses taught by academically certified teachers as

meeting graduation requirements, the state colleges did not accept them as meeting entry requirements. Thus, students planning to attend four-year colleges were steered away from applied academic courses.

Teachers also talked about seat-time regulations that required students to spend a specified amount of time per school day in particular subject areas. Administrators at some sites talked about the need to use block scheduling of students—i.e., teams of teachers sharing students over a several-hour block of time. This would allow for the development of more sophisticated connections between subject areas and more hands-on project activities that take longer than 45 or 50 minutes. Because of master schedule constraints, this innovation was viewed as impossible by some sites. Three schools—Johnson, Bradford, and Inverness—had experimented with block scheduling and were moving away from the traditional time blocks. Franklin, governed by a teacher steering committee and no longer under seat-time regulations by the state, was also considering this.

Teachers and administrators at every site mentioned time as a major constraint. There was not enough time during the traditional school year to cover the curriculum desired. Teachers were not given enough time during the school year or summer to prepare for the new curriculum or teaching practices. And especially in Ohio, schools were not given the time they needed to acclimate themselves to the change—the mandate had to be implemented within the time frame specified. Because a reform such as integration can take years to implement fully—even under the best conditions—these everyday time constraints both contribute to the overall time needed for reform and weigh the process down along the way.

Finally, principals talked about another set of regulatory constraints that inhibited their efforts at integration: hiring policies dictated by the district or by union contracts. These policies controlled hiring and firing at the district level and did not allow some principals enough latitude to build a team of teachers with the skills and dedication needed for a truly integrated program. Some principals said that teachers who remained recalcitrant and refused to support integration should be fired. But the principals lacked the power to fire them.

These principals were especially frustrated by union seniority rules that governed layoffs. They said that the junior staff were not necessarily the ones who impeded progress at the schools, and they wanted more control over the layoff decisions. Furthermore, some principals attempting integration wanted to hire new staff with different credentials than those normally accepted by the district. One principal tried to hire personnel with multiple experiences in the business world, technological understanding, and a disciplinary degree, but the people who met those requirements did not have teaching certificates and the district stalled the hiring process on these grounds.

Across all sites, inducements offered to teachers to encourage change were minimal. Sites relied heavily on teachers' professional commitment to propel the integration effort. Teachers put in long hours at school and at home, without additional pay. At most, teachers received two weeks' paid time in the summer for curriculum development. By and large, school and state administrators expected teachers to engage in curriculum development and revision on their own time or during one free period a day. At only two sites did collaborating teachers have free periods scheduled consistently at the same time. Because curriculum development is "hidden" in teacher salaries, states mandating or encouraging widespread curriculum re-

form did not adequately budget for these activities. They held firmly to the belief that the capacity is "out there."

No formal evaluations of the integration programs have been conducted. (We previously discussed Ohio's thwarted attempt at evaluation.) Program evaluations thus far consist of self-reported "good feelings" or "bad feelings." Some teachers were able to offer specific examples of students' demonstration of acquired skills (e.g., Johnson and Bradford), but schools simply lack the funds or expertise to conduct program evaluations. Moreover, they have little incentive to do so because they are rarely held accountable for failures.

Attempts at pedagogical change were impeded by lack of staff development planning and resources. Clearly, the most innovative changes in activity-based learning arose from school-based innovations in experimental schools. However, at each site we observed both "traditional" and "nontraditional" instruction in the integrated programs. Finding this mix is not surprising: Hiring policies generally constrain school administrators; teacher education programs vary; and individual teaching styles vary, as does the level of experience. Finally, this situation is consistent with organizations in transition to new modes of operation—full adoption is not complete.

Across the board, schools lacked policies to support staff development activities aimed at incorporating activity-based learning or changing teaching approaches. The two exceptions were Glendale, which changed its teacher evaluation procedures, and Franklin, which provided inservicing. It is not clear whether Glendale's changes in evaluation are supported by staff development activities to help teachers alter their practices.

Interviews at the enhanced engagement and enhanced academics sites indicated that these schools faced a specific set of problems in attempting integration because many of their entering students were below grade level in reading and math. These two sets of schools focused on increasing academic preparation partly because of this problem. But as they attempted integration reform, the schools were hampered because some of the students could not meet the minimal competencies to undertake this more rigorous curriculum. Thus, much of the energy for change had to continue to be focused on remediation. Teachers and administrators noted that this would continue to drain their resources until lower grade levels were held more accountable for the student experiences they provided.

In conclusion, all the sites, no matter which type of school, attempted curriculum changes for integration or were in the process of doing so. The enhanced academics sites emphasized increased academic content. The enhanced relevance sites, with existing strong academic content, emphasized the practical application of knowledge. The enhanced engagement sites made less progress in changing curriculum, but focused on organizational changes aimed toward reengaging students. The enhanced relevance schools made the most progress at changing pedagogy.

In changing curriculum and pedagogy, the schools also changed many other facets of schooling, including staff composition, hiring practices, scheduling, relationships with other schools, staff development, and funding patterns. Implementing integration implied a realignment of the organization of the schools.

All sites reported major barriers to new curriculum and pedagogical practices: existing regulations, poor funding, lack of existing materials, and lack of support for teacher efforts.

Finally, the policy environments at the sites affected their efforts. The enhanced academics schools followed the state mandate to the letter of the law, and efforts swelled or dwindled according to state emphases. The enhanced relevance schools, freed from many constraints, produced innovative practices, but two of the schools generally confined them to pilots. The enhanced engagement sites instituted new organizational structures but made less headway toward curricular and pedagogical reform.

5. FOSTERING NEW TEACHER-TO-TEACHER RELATIONSHIPS

Integration of academic and vocational education requires new relationships between individual teachers and among groups of teachers. New teacher-to-teacher relationships support integration in several ways.

First, teachers' roles and relationships with each other must change, as a practical matter, to develop integrated curricula and teaching practices. As explained in the previous section, no packages of integrated curricula or pedagogical techniques exist that are adequate from the point of view of teachers. At the sites we studied that attempted curriculum and pedagogical changes, all teachers interviewed reported the need to extensively revise existing curricula and learn new teaching practices in order to accomplish the integration goals. A strong message from our analysis was that teachers need to work in interdisciplinary teams to develop these curricula and new practices. Thus, as an interim step, teachers must collaborate to develop the classroom activities that make up an integrated program.

Second, even if an integrated curriculum had existed, teachers reported that they would need to interact with each other to develop the skills and knowledge base needed to become expert at integration—neatly packaged materials would not be a substitute for learning through observations and interactions with their colleagues on specific lesson plans. Teachers reported that this type of interaction is needed for several years, until they become familiar with the integrated field. For example, a science teacher might need to interact frequently with the technology or vocational teacher until he or she mastered a series of examples and applications to be used in class and mastered the teaching practices that support those examples. Some teachers felt this interaction was needed on a permanent basis.

Finally, vocational programs and their teachers have been consistently undervalued in an organization geared toward advanced educational certification as the sign of success (Little and Threatt, 1992). Integration reform explicitly places a higher value than is currently the norm on the talents of vocational teachers and the majority of students they serve—those not immediately college-bound. It is difficult to mandate new values to be held by teachers, parents, administrators, and students.

However, some teachers at the sites reported that they learned to value each other by mixing with and understanding the contributions made by each individual. Teacher collaboration or other forms of increased interactions provided the opportunity for increasing the value placed on all teachers and all students. However, there were teachers at every site who did not value collaboration and preferred the status quo.

Our sites used a variety of practices to foster new relationships among teachers and supported these practices with changes in policy (see Tables 5.1 and 5.2). These practices and policy supports are summarized below. The practices adopted tended to vary by integration approach. Thus the approaches are treated separately below. However, the local- and state-level supports showed much less variance by approach, although they varied widely between sites. The discussion of supports, therefore, is not organized by approach.

Table 5.1

Local Actions to Foster Teacher-to-Teacher Interactions

Approach/Site	Curriculum Development Teams	Joint Noninstructional Time for Team	Joint Instructional Time for Team	Organizational Changes	Teacher Inducements
Enhanced academics					
Glendale	AA and vocational teachers form teams	Summer workshops; joint planning period; physical proximity	Classroom observation	None	Observation required; new evaluations; leaders communicate expectations
Markham	AA and vocational teachers form teams	Joint planning period; physical proximity	Classroom observation	AA teachers assigned to occupational departments	Leaders communicate expectations
Warwick	AA and vocational teachers form teams	None	Classroom observation	None	Leaders communicate expectation
Enhanced relevance					
Bradford	English and vocational teachers form teams	Summer workshops	None	School improvement steering committee, writing groups created	Leaders communicate expectations and provide workshop
Inverness	Four academy teachers act as team	Joint planning period; physical proximity	None	Academy created	Leaders communicate expectations
Johnson	Pilot teachers act as team	Summer workshops; joint planning period	Occasional team teaching[a]	None	Leaders communicate expectations
Enhanced engagement					
Franklin	None	Summer workshops	None	Staff senate, improvement committees created	Leaders communicate expectations
Yardley	None	None	None	School improvement steering committee created	Leaders communicate expectations

[a]See text, pp. 40–41.

Table 5.2

District and State Actions That Shaped Teacher-to-Teacher Interactions

Approach/Site	Mandate	Other Action[a]
Enhanced academics		
Glendale	State regulation implies teaming; guidelines support it	None
Markham	State regulation implies teaming; guidelines support it	None
Warwick	State regulation implies teaming; guidelines support it	None
Enhanced relevance		
Bradford	None	None
Inverness	None	None
Johnson	None	None
Enhanced engagement		
Franklin	State requires teacher participation in curricular decisions	District workshop
Yardley	None	None

[a]System changing/inducements/capacity-building.

PRACTICES THAT FOSTER TEACHER-TO-TEACHER INTERACTIONS

The eight schools we studied fostered new teacher-to-teacher interactions by introducing new staffing patterns and altering the school structure. The changes included hiring new teachers, teaming,[1] providing joint noninstruction periods, joint instructional times, workshops, and new governance structures. To facilitate team curriculum development, teachers were provided with time together outside of instructional periods. In addition, some sites provided time during instructional periods for teachers to observe and learn from each other or provided workshops during the summer. Finally, schools changed their organizations to increase the input of teachers into curriculum decisions or to ensure that teachers who had not interacted before were given the organizational structure needed to allow interaction. The sites following different approaches emphasized different practices.

Teacher-to-Teacher Interaction at Enhanced Academics Sites

Because the existing program of vocational education at enhanced academics sites had not emphasized academic preparation, few academic teachers taught in these schools prior to the AA program. The applied math and science teachers hired at Warwick were the first math and science teachers with the required academic credentials in the building. Thus, to implement AA in Ohio, administrators hired teachers with the required academic credentials

[1]Teaming refers to assigning teachers to work together to develop curriculum. In our usage it does not necessarily mean that teachers jointly teach classes.

into the school. In this sense, the introduction of AA changed the teacher pool in the vocational schools permanently and introduced new possibilities for collaboration.

The three sites used a common approach implied by the state mandate and outlined in the state implementation guidelines. Pairs of teachers, each consisting of an AA teacher (usually newly hired) and the related vocational teacher, were assigned by the administration to work together as curriculum development teams. The pairs were supposed to interact with each other to develop the occupationally specific applications in the AA courses required by the state. In addition, the teams were to develop vocational course materials that increased the academic content in the vocational courses. Together, they were responsible for the horizontal alignment of the vocational and AA courses.

To facilitate this, administrators attempted to provide joint time for the teachers to develop the curriculum and exchange views and practices. This often required additional funds to pay for the "free" periods. The administrators reported that they attempted to assign teachers a common or joint planning period over the course of at least a year. In some cases, this was a period every day for three years. In schools without access to additional funds, this was a common planning period for a year, or no common planning period at all.

Two of the schools also used physical proximity to encourage interaction. Both Glendale and Markham reported reassigning the space of AA teachers away from academic areas and into the vocational areas of the school buildings. This gave teachers greater opportunity to interact daily, if only briefly.

The schools also used summer workshops or time during the summer to support the effort. At Glendale this practice was taken very seriously. The process of converting each vocational program to an applied format began with a two-week period when the vocational teacher interacted with his or her advisory council and the AA teacher to redefine the vocational area and develop the new vocational curriculum. The AA teacher took this new vocational curriculum and produced, in collaboration with the vocational teacher, an "applied curriculum." This process was repeated for each vocational program until all vocational programs in the school changed to an applied format. At the other two schools, the process was much less formal. On an occasional and arbitrary basis, the teams of AA and vocational teachers who were scheduled for conversion in the coming fall were given time during the summer to begin curriculum development.

In addition to noninstructional time, the sites provided observation time. The teacher pairs were given time to sit in on each other's classes to observe teaching practice and to supply connections between the academic and vocational materials covered. At all three schools, the AA teacher observed the vocational teacher's lab once a week.

Finally, Markham reorganized teachers within the school. It assigned all of its AA teachers to vocational departments, while its strictly academic teachers remained together in a single department. This action was taken by the administration in an attempt to ensure that the AA teachers remained close to the vocational subject areas. The teachers had mixed reactions to this practice. Some AA teachers reported dissatisfaction. They felt the need for more collegial interactions with their traditional academic disciplines to maintain competency and good practices, and they resented being evaluated by vocational administrators not familiar with their academic fields. Other teachers reported more positive reactions to the arrangement.

Teacher-to-Teacher Interaction at Enhanced Relevance Sites

The enhanced relevance schools also used teacher teams, usually consisting of three or more teachers, to develop curriculum, but the team membership varied among schools. The teams at Bradford included English and vocational teachers who volunteered for the curriculum writing groups but were also approved by the steering committee. The committee emphasized the need to get recalcitrant teachers involved in the writing groups to avoid future problems in implementation. The teams at Johnson included teachers from several different academic disciplines and the technology teachers. The teams of teachers in these schools tended to be volunteers, at least initially. The Inverness team was self-selected, as these teachers were hired directly into the academy with knowledge about its integration goals.

The schools provided noninstructional time for the development of curriculum and collaboration. Inverness provided a joint planning period for all four teachers. Johnson offered a common daily planning period to the teachers involved in specific pilots. At Bradford, a common planning period of four hours per week was provided to selected teachers involved in writing groups.

Bradford and Johnson both used summer workshops to bring the teacher teams together to discuss common goals, problems, and curricular or pedagogical changes. At both sites, these were two-week sessions prior to the fall when integration would begin. Bradford also hired a consulting firm to provide staff development on collaboration skills. The teachers felt this was not useful, so the practice was discontinued.

These schools did not use physical proximity to foster new relationships. In fact, teachers at Bradford and Johnson complained about how separated the vocational or technology labs were from the academic spaces of the buildings. In both schools, the two major divisions are in entirely separate spaces, with the vocational or technical labs being located "at the back of the school"—away from the mainstream of school activity. The academic teachers did not normally associate with vocational and technology teachers, partly because of physical distances.

Inverness did offer this opportunity simply because the four academy teachers, including both AA and technology teachers, were separate from the rest of the school. Thus, as a small group they had continuing close contact with each other. Inverness also used some team teaching, and the teachers reported that this enabled better horizontal alignment. On the other hand, some academy teachers reported that the separation of the academy from the rest of the district isolated them and their students from the mainstream.[2] The schools did not provide classroom time together for teachers to learn from each other.

The enhanced relevance schools provided examples of changes in governance structure that promoted new relationships. The most obvious example was Bradford's use of a steering committee to develop a school improvement plan. Teachers and administrators sat on this committee and worked together to draw up the Bradford plan. This committee was, however, temporary; it was dissolved after five years, because the administrator involved failed to

[2]Other teachers felt that the academy should be housed independently of any one high school, because its affiliation with one school discouraged some students from leaving their "home" schools to attend class at a "rival" school.

keep it organized. The school plans to reinstitute it next year with parent representation as well.

Inverness' academy approach was a reorganization that not only separated the academy teachers from the rest of the school, but provided the means for the four academy teachers to collaborate. The four teachers involved acted as a committee, discussing the goals of the academy and the means to achieve them.

Teacher-to-Teacher Interaction at Enhanced Engagement Sites

The two schools in this category chose a very different approach to teacher interactions. There was very little teaming, and little joint time was made available to discuss curriculum work. No classroom observation time was provided. Although Franklin did provide a few days in the summer for its applied academic teachers to meet together, the three teachers who were to implement the SREB version of applied academics did not consider themselves a team and never met with the vocational teachers.

Instead, new teacher-to-teacher relationships at these schools focused on the issue of governance—who decides and how. Both schools entered the school improvement movement with district-level support—and in the case of Franklin, state-level support—to emphasize site-based, participatory management. Thus, these schools supported teacher interaction to decide the larger issues of what the goals of the school should be and how they should be accomplished. The interactions took the form of temporary committees for specific issues, staff senates, teacher-led steering committees for school improvement, and weekly meetings to discuss issues.

In addition, Yardley reorganized its traditional departments into a matrix of disciplinary departments and occupational clusters. English, history, math, science, and vocational teachers were assigned to both their normal departments and an occupational cluster. This occupational cluster was to have regular weekly meetings at which teachers could discuss the educational issues relevant to the occupation. Franklin was moving toward this during our last visit.

Teachers' Assessment of Interaction Practices

Teachers at each of the sites said that collaboration practices did indeed encourage the building of new relationships to support integration.

Without exception, teaming and noninstructional time were rated highly as practices to support collaboration toward the building of a new curriculum. This was true for sites that used these approaches as well as those that did not. All teachers agreed that any serious effort to implement integration would have to be supported by more paid noninstructional time. The more time, the better.

While these practices aided curriculum revision, teachers also felt professionally encouraged by their interactions. Many reported that the noninstructional times proved the means to overcoming midcareer burnout and deadly isolation. Before these practices were in place, teachers said they rarely discussed professional issues; instead, hallway conversation and regular departmental meetings covered routine issues of scheduling, cafeteria duty, and personal problems. With the focus on school improvement, teachers involved in teaming re-

ported that they used the time to discuss professional issues such as the set of skills a student should have upon graduation and the professional responsibilities of teachers. These discussions led to curricular and pedagogical changes.

Some academic teachers mentioned that they had learned how to better motivate and work with vocational students from the vocational teachers. This learning seemed a byproduct of teaming and thus depended on the team's ability to collaborate.

The practice of classroom observation was reported to be more problematic. Some teachers at the Ohio sites diligently followed it and wanted it continued. Others were less enthusiastic and thought it could be safely discontinued.

Changes in governance were also reported as problematic. Teachers appeared to support the notion of committees with strong teacher representation to develop new school plans. But teachers at schools that attempted major governance or organizational shifts, primarily the enhanced engagement schools, were less sure of the results and the translation into improved student experiences. While teacher collaboration definitely occurred at these schools, this collaboration has not had strong effects on curriculum and pedagogy. Instead, it has focused on governance and just getting to know each other—crossing barriers that had not been crossed before. Teachers at these schools were unsure how this would translate into practical changes in the experiences of students, but they were enthusiastic about the governance changes made. They felt they were now ready to attack the existing curriculum and make fundamental revisions. They felt this would have been unlikely prior to the governance initiatives.

SITE-LEVEL SUPPORTS FOR TEACHER-TO-TEACHER INTERACTION

Administrative actions at the school level to support new relationships varied considerably and were the source of much discontent among teachers and administrators. Our group of interviewees universally agreed on the set of administrative practices needed to support new teacher interactions, but those practices were not followed consistently.

Teaming

Interviewees reported teaming worked best when (1) the team was consistent from year to year and (2) teachers were given a consistent set of courses from year to year.

At sites with frequent reassignments, teachers reported frustration. Each year began with new partners and new courses—in essence, they were beginning all over again. The result was weakened curriculum as teachers struggled to keep up with the changes. If teams worked well together, they wanted to stay together and improve on the work already accomplished.

Perhaps the single most contentious administrative issue in developing new teacher teams is whether the teams should be voluntary or assigned. Teachers were concerned about colleagues' unwillingness to participate in integration. A team member who was not interested in integration often did not fully participate in the collaborative efforts. In Ohio, teachers ignored their classroom observation obligations and used the time for other purposes. In other places, some teams never really collaborated, as disinterested teachers refused to meet or ex-

change practices. Thus, teachers tended to emphasize the need for voluntary assignment and a slower approach to change in order to make converts of those who were nonsupportive.

The enhanced relevance and enhanced engagement schools experienced further difficulties. There were no mandates with which to comply; pilots were undertaken on a voluntary basis. But when their pilots were successful, the administrators often mandated that all teachers comply. This caused strong negative teacher reactions in several sites. Some teachers valued choice among the staff and wanted program evaluations before setting off on a strong course of action. For example, at Johnson, even teachers involved in the pilot questioned the wisdom of such a move. Pilots had not been strictly evaluated to show improved student outcomes, and teachers were not consulted in the decision to expand integration to all freshman classes. Some teachers felt that they should be given the choice of whether or not they would have to use a team approach and integrated materials.

Summer Workshops

Summer workshops were productive when the whole team was present, but at several sites, only the vocational teachers were brought together. Glendale offers the best example of bringing many different groups together during workshops to provide inputs from school clients and different teachers on curriculum improvement needs.

Bringing these groups together required planning by the administration and funding for teachers' salaries. Some schools did not finalize class schedules until the end of August and thus could not hold a summer workshop.

Those groups that had a strong focus for improving the curriculum produced the most concrete results from the workshops. At several sites, teachers were brought together but did not understand the purpose of the workshop. They reported much time was wasted because of poor guidance from administrators about the goals of integration and a lack of specific ideas on what to change.

Teachers reported that volunteerism and dedication were sometimes taken too far by administrators. Many teachers said they had family or other commitments that constrained their ability to volunteer extra hours for school improvement. They all preferred to be paid for time worked.

Joint Time During the School Year

The practice of fostering teacher-to-teacher interaction by providing joint instructional and noninstructional time was also made easier by advanced scheduling and planning. This enabled teachers to get together informally over the summer to exchange materials prior to the beginning of the year. Such interaction was especially important for those sites that did not provide summer workshops.

The biggest failure in this regard appeared to be that administrators promised this type of support but did not actually provide it. Administrators at both Markham and Warwick reported that last-minute schedule changes or difficulties in scheduling resulted in inconsistent or no joint time. In these situations, teachers reported that they fell back on the thirty-minute preparation times at the beginning and end of the day for joint consultations. Teach-

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ers said they began to make much less effort to improve curriculum or exchange ideas, interpreting the lack of a joint noninstructional period as a signal from the administration that this activity was not important. Progress toward integrated curricula faltered in these two schools. Small schools with many vocational areas and few academic teachers may have difficulty in manipulating the schedule to provide joint time.

A related issue brought up at many sites was how long a team would need noninstructional time to interact. Should it be a transitional or permanent practice? Teachers' views were not uniform. Some thought a year would be long enough to accomplish the tasks; others thought a more permanent arrangement would be necessary, especially for vocational areas undergoing rapid change. Schools also took different approaches. In Ohio, Warwick and Markham used teams as an interim measure to change curriculum, while Glendale provided permanent funding for it.

Physical Proximity

While physical proximity was used to foster integration in fewer sites, it was reported to be a highly satisfactory mechanism. It is a low-cost intervention that administrators can use to begin to mix teachers. Teachers reported that once noninstructional time and workshops diminished, physical proximity provided the means to maintain daily contact with colleagues who had previously not been readily accessible.

Teacher Inducements

Inducements to support new teacher relationships could take the form of rewards to teachers to undertake the additional work of collaboration or normal pay for those activities.

The sites did pay teachers for the additional time worked during the summer. Their normal salaries covered the noninstructional time during the school day, which was reimbursed at normal rates of pay. No site offered additional monetary incentives—either bonuses or merit increases. (Bonuses, common to other types of organizations, are not a part of normal school practice or policy.) Pay schedules were followed no matter how great the effort of the teachers. Teachers reported putting in much more time on collaboration than that paid for by the school. Meetings took place before and after school, and teachers worked at home to develop curricula.

Teachers undertook this unpaid additional work as part of their professional dedication to better schooling. We heard some bitter complaints about this—teachers have traditionally been called upon to undertake these types of changes without any increase in pay. We also heard resignation—some teachers accepted the practice as the norm and thought of it as just one more burden of their profession.

Funding Support

Each of the schools had to provide funds for the collaboration time. The Ohio sites were mandated by the state to undertake the effort, but the state provided few additional funds to the schools. Glendale, as part of its initiation of integration, successfully increased its local levy. The two other directed schools had less success in funding the program from local

sources and reported that collaboration suffered as a result. Neither school initially approached taxpayers for an increase. Instead, resources to support the collaboration efforts were squeezed out of existing programs. Summer workshops were irregular; noninstructional time was inconsistently provided. Both schools argued strongly that teaming could end after three years and in some cases less. Administrators said that budgets were a key concern in the decision to end teaming efforts. They simply could not afford noninstructional time. The fortunes of Warwick have changed somewhat, as it finally got a new tax levy and benefited from the redistribution of federal Perkins Act dollars. However, whether this windfall will be used to further collaboration is unclear.

Four of the other schools used grant monies or other "additional" funds to promote collaboration efforts. In each case, as monies dried up, the collaboration effort dwindled and integration began to falter.

STATE-LEVEL POLICY SUPPORT FOR TEACHER-TO-TEACHER INTERACTION

Generally, the state policy support for teacher interaction practices did not vary much by integration approach. The few exceptions to this statement are in the regulatory environments of the sites.

Legislation and Regulatory Policy

The different approaches varied in their regulatory environments and in how they encouraged teachers to interact with each other. Only the Ohio enhanced academic sites had a regulatory environment that specifically addressed the need for new interactions. The SDE Office of Vocational Education recognized very early in its program that teacher collaboration was essential to the successful implementation of AA at the site level. In its guidelines to the sites, the SDE recommended noninstructional time for planning and developing curriculum and classroom observation but did not mandate it. The sites varied in their support for collaboration, based on their own goals and resources.

At the enhanced relevance sites, the regulatory environments allowed for collaboration in a different sense. As discussed in Section 4, these sites, because of their special missions, had either traditions of site autonomy or actual waivers from state- or district-level regulations governing curriculum and textbooks. These waivers translated into licenses to experiment with curriculum and pedagogy, thus providing the basis for collaboration.

The enhanced engagement schools were given autonomy of a different sort. In both, district-level decentralizing initiatives provided the license to become model schools. They were further supported by state-level actions. Franklin's state department of education began a deregulation regime that freed sites to make more choices about curriculum. The state chose Yardley to be the recipient of a model school grant, which gave the school freedom to innovate.

Inducements

In our interviews, state-level officials tended to express disregard for the efforts of teachers and the costs associated with making changes to curriculum. One state representative im-

plied that there was much fat in the system, and teacher efforts would be forthcoming if the state simply required teachers to change. This sentiment was repeated by officials in other states. In fact, this undervaluation might result from the fact that teachers have traditionally put in many volunteer hours to upgrade and improve their teaching. These hours have not been captured in traditional state or local accounting practices. They remain hidden costs.

Ohio offered an additional incentive—a negative one. Vocational teachers who did not participate in the effort were threatened with job loss. The AA plan of the state implied the substitution of academic teachers for vocational teachers. The state workshop on AA increased the fear that many vocational teachers would lose their jobs, as attendees were told that half of them would not have a teaching job in five years. This threat motivated some teachers to try harder, but it also left a pall over many, reducing their enthusiasm for reform.

Capacity-Building

Few states or districts encouraged collaboration activities with capacity-building supports. States could have offered information to teachers on how to go about collaboration, how to develop curriculum, or how to exchange ideas in a positive manner. Generally they did not; only Franklin and Bradford offered staff development on collaboration. At Franklin, this was offered by the district through a central staff development office. At Bradford, the school hired a consultant to provide a short workshop.

None of the states, districts, or sites worked with teacher colleges to aid in the development of collaboration courses or courses on integrated curriculum that could prepare teachers for the new roles demanded by integrated programs. As long as this situation continues, new teachers entering integrated schools will have to learn these new techniques, and existing teachers will not upgrade their integration skills.

Finally, many teachers we interviewed suggested that it would have been helpful to be able to consult personally with teachers from schools that had already attempted integration. Through seminars or visits, these more experienced teachers could have passed on practical hints about how to work together on curriculum development, how to deal with difficult colleagues, and how to encourage struggling teachers. Teachers at these sites did not know of such services or networks and did not have the funds needed to access them if they existed.

System Changing

As with capacity-building policy supports, we saw few changes to authority structures, creation of new agencies, creation of new classes of clients to be served, or changes in lower grade levels that would support collaboration and thus lead to integration.

The states we examined maintained an organizational structure that separated academic from vocational curricula and separately certified the two groups of teachers. District-level administrative structures followed suit.

The most extreme example was that of Ohio, with a separate state vocational administrative structure and physically separate facilities for vocational education at the eleventh- and twelfth-grade levels. While the concept of integration applies to all students, in Ohio it is

mandated only for vocational students. Vocational teachers and AA teachers are the only ones who are required to undertake it. Thus, the system of education in Ohio, while acting to initiate integration, also ensured that integration would not be replicated in the lower grades or in the sending schools. Teachers in sending schools we talked to said that they did not know the state had mandated an AA program. They did not know what it was and they did not normally interact with any of the teachers from the vocational schools. Thus, collaboration is occurring only within the vocational schools.

The enhanced relevance and engagement sites suffered from the same phenomena. State representatives, trying to respond to the Perkins amendments, did not focus on these schools as examples of integration in their states but rather saw them as unique cases. State representatives had already classified integration as a solely vocational reform and looked for exemplars to replicate only in the traditional vocational programs.

COMMON ISSUES REGARDING TEACHER-TO-TEACHER INTERACTION

While efforts to encourage new teacher-to-teacher interaction varied by approach and by site, several general themes emerged.

First, the practices to encourage new teacher interactions changed several commonplaces of the schools. Schools developed new staffing patterns, new governance structures, and new departmental organizations, and some even changed the physical locations of teachers in efforts to establish new relationships. Second, such changes in the practices and policies of schools amounted in some cases to the beginnings of systemic reform of the governance structure of the schools. In other cases, they were part of a deliberate restructuring effort.

Third, the attempts at collaboration took a great deal of time and effort on the part of teachers. While there was no consensus about whether collaboration efforts needed to be permanent, it was clear that sites did support some level of effort for three to five years as they tried to establish new curricula and pedagogy.

Fourth, a theme common across sites was that the collaboration efforts benefited by capacity-building investments. When these were lacking or diminished, teachers reduced their curricular and pedagogical efforts. Collaboration had real costs, including pay to teachers for time spent in workshops, pay for joint instructional or noninstructional time, and the costs of their voluntary hours. Furthermore, staff development programs that could have served teachers in their efforts were largely lacking. Schools sought new sources to provide for these efforts, either grants or new tax levies. Those unable to tap into new funds curtailed their collaboration efforts. Thus, higher-level inducements were essential for collaboration at several sites.

Fifth, some teachers and administrators reported discontent over collaboration practices. Enmity between academic and vocational teachers sometimes flared when one group was placed in a managerial position over the other. Old traditions and loyalties to disciplines die hard. Some teachers at each site reported that they preferred the more traditional isolated and discipline-centered organization of schools. However, other teachers embraced the collaborative practices and reported new respect for their colleagues as a result of these efforts.

6. IMPROVING SCHOOL TRANSITION

Vocational and comprehensive secondary schools transition youth to the workplace and college. High school curriculum and pedagogy prepare students for further education, jobs, and adult roles, but other school functions specifically prepare students for the post-high school transition. Schools provide funding for employment and college counseling services, administer precollegiate testing (i.e., PSAT, SAT, ACT examinations), organize college and job fairs, articulate programs with local colleges, and form links with local businesses and government to implement summer jobs programs. Although these efforts are fairly uniform across secondary schools, they are for the most part peripheral to the daily business of teaching and learning. Some proponents of integration want schools to take transition more seriously, that is, to have it in a more central role and commingling with curricular and pedagogical improvements.

Integration of academic and vocational education practices could affect a school's transition efforts in four areas:

- **Planning partners.** Schools might introduce business or parent partners into the planning process, thereby changing a school's approach to preparing students for transition.
- **Transition-specific curriculum.** Schools might change curriculum offerings to emphasize materials that students need to make career choices and enhance their job search. This could be a reorganization of courses into occupational clusters aimed at more specific career counseling, the inclusion of new materials about careers within existing courses, or articulation of courses with the community college for a fifteen-year (K–14) school experience.
- **Transition services.** Schools might initiate career exploration or reinforce the usefulness of existing services for transition.
- **Credentials and certification.** Credentialing tests, certificates, and diplomas might be changed to reflect curricular reforms. These changes might be initiated by an integration site, by a state in response to integration or other reforms, or through the influence of college admission standards or employer requirements. Because credentials and certifications are used by graduates to "buy" their postsecondary experiences, we think of them as transition "capital." Students want to earn this capital and schools might arrange their curriculum to facilitate this.

Below we discuss in detail which of these practices the schools changed (summarized in Table 6.1) and the local and state actions that supported those changes (summarized in Tables 6.2 and 6.3).

SCHOOL TRANSITION AT ENHANCED ACADEMIC SITES

The enhanced academic sites had traditional programs emphasizing school-to-work transition. State mandates and inducements were used as vehicles to promote local change, but the focus of transition changed little.

Table 6.1

School Transition Practices by Integration Approach

Approach/Site	Planning Partners	Transition Curriculum	Extracurricular Services	Credentials/ Certification
Enhanced academics				
Glendale	New advisory board roles; use of business surveys; industry trends surveys	Employability course; articulation agreements; half-day vocational program	No change to existing placement efforts	Introducing competency-based tests; career passports
Markham	New advisory board roles; use of business surveys	Employability course; articulation agreements	No change to existing placement efforts	Introducing competency-based tests; career passports
Warwick	New advisory board roles; use of business surveys	Employability course; articulation agreement; half-day vocational program	No change to existing placement efforts	Introducing competency-based tests; career passports
Enhanced relevance				
Bradford	Use of business surveys; new advisory board roles	Occupational clusters; career exploration of vocational areas; articulation agreements	Career guidance	Portfolio assessment
Inverness	Academy connections to business	Technology emphasis; articulation agreements; career awareness internship	Career guidance	None
Johnson	Business foundation; teacher-to-business connections	Technology emphasis; career exploration	None	Portfolio assessment
Enhanced engagement				
Franklin	Parent and business membership on school governing committees	No change	Career plan at eighth grade	Portfolio assessment
Yardley	Parental advisory committee; community survey; business partnership	Career paths; career exploration	Improved career counseling function begins at ninth grade	None

Planning Partners

Prior to the integration effort, these schools had business partnerships in place that had been mandated by the state and by federal Perkins legislation. During the course of the many changes undertaken, these practices underwent changes as well.

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Table 6.2

Local Actions to Promote School Transition

Approach/Site	Organizational Changes	Funding Allocations	New Institutional Relationships
Enhanced academics			
Glendale	None	Fund employment service	Articulation agreements between vocational education programs and community college
Markham	None	None	Articulation agreements between vocational education programs and community college
Warwick	None	Fund employment service	Articulation agreements between vocational education programs and community college
Enhanced relevance			
Bradford	Vocational teachers assigned to occupational clusters	Fund career guidance and two years of career exploration before majoring	Articulation agreements between vocational education programs and community college
Inverness	School-within-a-school	Fund teachers to provide guidance counseling and career awareness	Two-week internships in worksites; articulation agreements with community college to aid guidance and planning
Johnson	None	Fund program for career and college counseling for all students	Business and industry mentorships for 1/6 of seniors
Enhanced engagement			
Franklin	None	None	None
Yardley	Teachers organized into occupational clusters matrixed with traditional departments	Fund increased guidance counseling; fund employment service	Some articulation agreements between vocational education programs, community college, and four-year college

The schools used the employer survey, an existing practice mandated by the state, as a planning tool for their school transition efforts. The survey results indicated to administrators that workplace and worklife demands had changed and directed them to concentrate on academic improvements. Glendale's early entry into curriculum reform evolved from its administrators acting on 1979 survey results. Several years later, when the state initiated AA, partly in response to changing employer demands, Markham and Warwick acknowledged the state's rationale because their local employer surveys had yielded similar results.

Existing vocational advisory boards provided business input for planning school transition efforts. Perkins legislation established school-level advisory councils representing each occupational area to provide direction to the schools from a business and industry perspective. Before implementing AA, several of the schools had the advisory board review the curriculum

Table 6.3

State Policy Actions to Promote School Transition

Approach/Site	Inducements	Mandates/Regulations	Capacity-Building	System Change
Enhanced academics				
Glendale	Reimburse employability; offer reimburse option for half-day program	Regulates AA for graduation credit; requires accountability on placement; requires academic or vocational plans for all high school students	Fund pilot for grades 8–12 career plans and career passport	None
Markham	Reimburse employability; offer reimburse option for half-day program	Regulates AA for graduation credit; requires accountability on placement; requires academic or vocational plans for all high school students	Fund pilot for grades 8–12 career plans and career passport	None
Warwick	Reimburse employability; offer reimburse option for half-day program	Regulates AA for graduation credit; requires accountability on placement; requires academic or vocational plans for all high school students	Fund pilot for grades 8-12 career plans and career passport	None
Enhanced relevance				
Bradford	None	None	None	None
Inverness	None	None	None	None
Johnson	None	None	None	None
Enhanced engagement				
Franklin	None	Mandates portfolio assessment and career plan; no general track	None	None
Yardley	None	None	None	None

and provide advice to the vocational teachers. When the state mandated its competency-based testing program, the Ohio Competency Analysis Profile (OCAP), the vocational teachers, AA teachers, and advisory boards jointly reviewed the need for local adjustments. This was a new and different role for teachers. Because state officials closely consulted employers throughout the state to develop the new vocational curriculum, advisory board members were in a sense critiquing their peers. Employer members of advisory boards became more directly involved in curriculum review. Moreover, state policy transformed the committees from groups playing a weak advisory role to groups deeply involved in school improvement discussions.

Reinforced by the state's inclination toward close partnerships between vocational schooling and business, Glendale administrators have come to value employers as an important resource that should be used flexibly to assist the school's education program. As a result, they have adopted practices intended to make better use of local businesses. For example, the OCAP review prompted membership changes on the advisory boards. The OCAP was organized around a cluster of vocational programs, shifting toward instruction on a broader mix of skills. The board's membership needed to reflect this broader focus. Anticipating changing demands in the future, Glendale instituted a new policy requiring term limits for advi-

sory board members and established the expectation that membership might shift when demands changed. The OCAP review did not provide similar signals for administrators at the other two schools.

Glendale has taken further action to ensure that it remains aware of changes in the local economy in time to change curriculum appropriately. Vocational teachers now conduct an industry survey to assess local trends. The district Council on Vocational Education, a newly established body of local CEOs, reviews and interprets survey results. The review and interpretation will determine whether the school continues to have a strong focus on agriculture or shifts toward technology education. The process, which depends strongly on influential business people, provides input for improvement plans and guides investment and divestment decisions on vocational programs.

Transition Curriculum

The three schools attempted to organize the curriculum to encourage students to learn skills they would need in the workplace. Encouraged by state polices, they adopted new employability courses, articulation agreements, and half-day vocational programs for general-track and academic-track students.

Employability courses. Adoption of AA placed vocational teacher positions at risk, causing deep divisions at the schools and concern among administrators about the ability to implement the AA program. To relieve this problem, the SDE agreed that the schools could shift employability content from the old related period into a reimbursed course employing vocational teachers.

However, the state policy did not specify course content. Five years into implementation, educators still find employability courses problematical. Many teachers report duplication between employability and applied communications; others bitterly complain that teachers are misassigned, e.g., the plumbing teacher may be assigned to teach employability to the secretarial students. The state acknowledges that curricular improvements are needed, but everyone agrees that this new organization of course materials did save vocational teacher jobs.

There is no apparent consensus on how to proceed with improvements. One school, desiring the full two years of reimbursement, is willing to have employability take on a "generic" flavor; another is working toward a "correlated" approach with a one-year course.

Articulation agreements. The schools also worked toward new articulation agreements with community colleges as a means to improve the transition to postsecondary education for some high school graduates. Articulation is limited to high-skill fields, such as health and engineering, because experience has shown that most entry-level technician jobs do not require further education. High rates of placement in such jobs attest to a good match between the graduates and the local job market.

College articulation remains a spotty practice within schools and a limited transition vehicle. There is no state directive to alter or encourage college-going among vocational students; thus, the sites have undertaken this activity at their own initiative. After completing a year-long dialogue on entry worker skills and curriculum with a statewide delegation of industry groups and adopting the AA programs, the SDE maintains its focus on transitioning graduates into the workplace. Business and industry have not indicated that vocational schools

should shift toward a college emphasis. Instead, they have made it clear that from their standpoint, enhancing academics and broadening the cluster of vocational skills being taught within a program is a sufficient goal for vocational education. Thus it is not surprising that state policymakers insist that the vocational school's goal is to prepare graduates for a "global economy, but not necessarily for global jobs." The state does not plan to alter its aims, and apparently there are no signals from business that a change is needed.

Half-day vocational programs. Finally, two of the sites began to offer half-day vocational programs to nonvocational students to improve their understanding of workplace issues and prepare them in technical skills that would be useful in further education. These small programs target college-bound students attending nearby comprehensive high schools.

Glendale's curricular improvements package of correlated academics and competency-based vocational curricula allowed teachers to unbundle content and reformat vocational studies into half-time courses for college-bound students, across the breadth of vocational offerings. Over time, general-track students also became interested in the option. Warwick offers a less ambitious program, limited to technical courses, since these are areas where the school can clearly offer improved learning opportunities for college-bound students.

Scheduling the option is difficult for smaller sending high schools because they have less flexibility to offer core courses several times a day. Students are also expected to provide their own transportation. At this point, expanding the program is a matter of local discretion. Although the state provides a reimbursement option, only a trickle of students have enrolled in the courses. But this may change; vocational schools speculate that the state requirement that all high school students must declare a vocational or academic program might induce local comprehensive schools to increase the use of this practice.

Transition Services

The schools in our sample already offered many counseling services to help place students in jobs. These did not change with the integration effort; rather, existing practices and policies supplemented and supported the integration changes.

The schools, and particularly the vocational teachers, have always had a placement responsibility, and their efforts are encouraged by state data-gathering and accountability practices. The state equates excellence in vocational schooling with high job placement rates for graduates. Enhancing academic instruction has not altered this. The state collects job placement rates as an indicator of school performance and requires schools to perform follow-up surveys of graduates one and five years after graduation. This has induced the schools and teachers to focus on placement as a measure of merit.

This placement activity increases the likelihood that school-to-work transition will be smooth because teachers have become knowledgeable about the current job market, interviewing, and job search techniques. Placement for graduates requires vocational education teachers to make job site visits to check the suitability of potential employers, remain in regular contact with employers, and follow up when students are not placed or when they are fired. Teacher-employer networking became part of a school transition approach to achieve placement goals, supplementing the integration activity by improving the knowledge that a teacher can pass along to students.

Two of the schools also offer an employment service office to assist students with job search while they are enrolled and a placement office that focuses on part-time and summer jobs to provide earnings and experiences and to familiarize students with job search. Job coordinators maintain a job bank, post job notices, and publish job opportunities bulletins.

Credentials and Certifications

The state took the lead, and sites followed, in moving away from existing certification toward career passports. Prior to the adoption of AA, Ohio schools awarded vocational certificates upon graduation. According to teachers, these certificates were valued by students and employers because they communicated that the graduate was skilled. With the introduction of AA, the state proposed to document AA coursework and vocational skills in a career passport that graduates could present to employers. These passports document the skills and skill levels achieved by students during their course of study, supporting the competency-based approach now being emphasized by the state. The state recently initiated a pilot that packages individual career plans and career passports together, beginning with eighth-grade students.

Graduates of the vocational districts also receive diplomas awarded by their sending comprehensive high school. Initially, high schools were confused about AA, and some wanted to deny graduation credits for AA coursework. As vocational administrations communicated that AA contains rigorous academic content and is taught by fully certified academic teachers, sending schools became willing to credit courses toward graduation. The SDE supports this view and now regulates the program to ensure that all sending schools accept the AA courses as credit toward academic course work.

These negotiations were accomplished while a contentious debate over multitier diplomas was being carried out in the state legislature. During the years since the adoption of AA, the state has established a two-tiered diploma, and proficiency testing is now required for graduation. The state establishes a basic and an advanced diploma. The basic diploma certifies that a student has successfully passed the ninth-grade proficiency exam. The advanced diploma certifies that a student has successfully passed the twelfth-grade proficiency exam and completed graduation requirements (which the state seems poised to increase).

This set of mandates suggests that the state assumes greater rewards will improve student performance. But improving student performance is not a straightforward matter. It assumes that all coursework paths that students take can eventually lead to successful performance on proficiency tests. Apparently, the traditional sets of courses that many students take do not lead to proficiency-test success at the ninth-grade level, and the remediation burden for vocational schools is growing. The state therefore requires remediation for students who do not pass the ninth-grade proficiency exam. It is too early to determine whether AA can enable students to attain what they missed prior to vocational schooling.

In 1991, as part of the state modernization plan; the SDE mandated that all high school students would have to declare an academic or vocational major. In effect, this abolished the general track in high schools. While administrators are not sure of the effects of this action, they expect that a significant proportion of the former general-track cohort may choose a vocational major, which would result in a swelling of enrollments in the vocational schools. Al-

though past experience has indicated that general-track students often require remediation, administrations seemed determined to provide for these incoming students.

SCHOOL TRANSITION AT ENHANCED RELEVANCE SITES

The enhanced relevance schools lacked state mandates to change school transition policies, other than those governing Bradford as a vocational school. Nevertheless, these schools adopted a broad array of transition practices as part of their improvement programs. These changes tended to move the transition practices out of the realm of add-ons to the school day and into the mainstream of the curriculum.

Planning Partners

The sites differed in their approaches for ensuring business inputs into curriculum planning or transition efforts. Bradford and Johnson had long-standing connections to the business communities, which they used to provide input to the schools. Administrators at one site formalized business input to the school improvement plans by establishing advisory committees for each occupational cluster. The other site permitted business input to develop at teachers' discretion and on an informal basis. Inverness, as a start-up program, had to create such connections from scratch.

Feedback from businesses and graduates was fundamental to encouraging Bradford's school improvement efforts. As a vocational school, Bradford conducts graduate and employer surveys with the assistance of the state's education research service. Survey results in the mid-1980s revealed a sobering set of trends. Bradford learned that the majority of its employed graduates worked in fields outside their school major. Graduates indicated that they needed fewer occupation-specific skills and more generic work skills. Employers responded that they were willing to train graduates in specific areas if the graduates showed more general competencies. Employers especially complained about poor communication skills, and they wanted conceptualization rather than procedural accuracy. Committed to successful school transition for future graduates and with strong data in hand, school planners instituted curricular innovations.

As specialized science and technology schools, closely connected to comprehensive schooling, Inverness and Johnson do not directly involve business or higher education in their planning. Business influences school transition planning through state and national commission reports linking failures in the workplace to schooling. Higher education influences school transition planning through college entrance standards that move schools toward college preparation, advanced placement, and honors coursework. In the absence of locally initiated data collection or state inducements, inputs for planning school transition derive largely from college practices.

Johnson maintains other connections to the business community. To assist in providing labs and equipment, local businesses created a foundation in the early 1980s through which donations are made to the school. Initially, they secured over $5 million in equipment and labs for Johnson. However, district policy has since transferred the assets of the foundation to serve all the district schools. Induced to become more entrepreneurial, Johnson now actively, directly, and successfully lobbies businesses for gifts of new equipment.

At Johnson, close connections between teachers and business people in the community, encouraged by the technology emphasis, already provided informal inputs to school transition changes. Encouraged by the principal to increase interaction with the business community, teachers regularly contact local "high-tech" businesses for insights into new technologies and requirements for new subject areas to be taught. These ideas are then incorporated into the curriculum by individual teachers, rather than through a formal planning process.

Transition Curriculum

The sites reorganized their schooling efforts around content areas that are associated with college attendance. These areas provide an occupational focus for curriculum and counseling and as such serve as a school transition vehicle. Johnson and Inverness emphasize science and technology, whereas Bradford offers a range of vocational areas, including transportation, health, and electronics.

Because the district delegates some curriculum responsibility to the site, Bradford was able to insert transition materials directly into the curriculum to achieve its goals. Part of the integration effort involved restructuring the vocational program to ensure better career choices. Prior to electing an occupational major, ninth- and tenth-graders experience two years of career exploration. Bradford calls this "cruising." Students cruise through the technical curriculum, spending ten weeks in each of seven occupational clusters. Reinforcing the importance of including college as an option, Bradford graduates return to the school and discuss college and its importance to their own career mobility. Coupled with career guidance, these practices offer a strong program of career exploration for all students.

Inverness also inserted transition materials directly into the curriculum by requiring that all students perform an internship. Students explore technical careers through yearly internships in which they spend four weeks working half-days in a local high-tech firm. While the grantmaker required only *some* work experience, academy planners mandated two internships. Taking this and other aspects of the innovation seriously, district planners generously funded each teacher with three preparation periods daily.

Teachers at Inverness target high-skill experience and utilize a model of guided experience and mentors that they designed with the assistance of a business partner. For example, students might join programming and robotic design teams or work with groups using laser or other applied technology in medical centers. Academy teachers ensure that students do not undertake "gofer" duties but make the most of what the experience has to offer. Having 45 to 50 business partners, the academy is able to match student interest with firms. School officials claim they have been able to make satisfactory matches for the majority of students. Careful monitoring has allowed teachers to make adjustments for students who were highly displeased with an internship experience. These internships and contacts with teachers have caused the business partners to see the academy in a favorable light and to communicate strong support to the district and school board members. This support has proven invaluable to the academy as it struggles to remain viable in a fragile budgetary season.[1]

[1]See the synopsis of this site in the appendix for details on the budget problems.

In keeping with its college-bound focus, Johnson improved career and college planning for all students and made it part of the normal curriculum. Special career counselors familiarize students with a new career center during week-long sessions. These sessions are scheduled activities in ninth- and tenth-grade coursework. Ninth-graders explore career interests, and tenth-graders explore college choices. Juniors focus on SAT and ACT preparation. Seniors use the career center at their discretion as they prepare for postsecondary life. Program funding is entirely at the discretion of school administrators, who view career planning as a central aspect of their schooling-for-careers and college emphasis.

In addition, Johnson's school improvement plan calls for a mentorship program, in which the school joins with business partners. The program accommodates about one-sixth of the seniors, who engage in independent research projects under a business mentor's guidance. To accommodate all seniors, the program would need a program coordinator, but the district will not fund the position. As a result, this innovation, which encourages substantive business input, does not grow.

Two of the sites sought articulation agreements with community colleges. These agreements offered a clear path and procedure for testing and advanced placement. Because the community colleges located near these sites were looking for articulation opportunities to increase enrollments, the agreements were not difficult to establish.

The third site, Johnson, did not, however, seek such agreements because its students tend to go on to four-year colleges, and the curriculum required for graduation exceeds that required by the state college system.

Transition Services

All three sites increased their school transition services to students, but these were not always connected to the integration effort. Changes to the guidance function and career exploration varied by school.

Bradford has an active career guidance program. According to counselors, the admission process alone does not ensure appropriate placement, so career guidance is a necessary adjunct for many students. The counselors primarily attempt to clarify career focus for students who come to the school for the wrong reasons. The counseling program is only one portion of Bradford's schooling-for-careers emphasis.

As a district magnet, Inverness has a different problem and solution. Responsibility for guidance is shared by administrators, teachers, and counselors assigned to Inverness' feeder schools. Several administrators and counselors freely admitted that although they counsel students on a daily basis, they are relatively uninformed about the academy program. Others openly discussed counseling university-bound applicants that the academy is for "other kids." Moreover, by district policy, counselors may veto academy transfers. Because counselors, along with most teachers and the community, share a schooling-for-university focus, the academy is poorly served. Many do not believe the academy's focus on careers serves any real need. Without counselor referrals, the academy must recruit for itself. It appeals to parents to communicate their approval for a transfer, because counselors have been known to actively undermine the academy to parents. Once students enter the academy, teachers there provide guidance counseling. Academy teachers focus students' attention toward ca-

reers and colleges, primarily community colleges with whom they share articulation agreements. Teachers incorporate career awareness by arranging field trips and tours to high-tech firms.

Credentials and Certification

Bradford's state is in the process of changing its certification procedure. It proposes that instead of issuing a diploma at the completion of high school, schools issue credentials at the completion of tenth grade and again at the end of twelfth grade. Portfolio assessment and proficiency testing would accompany each step. A newly passed state education act mandates planning and implementation once funding is secured.

Anticipation of this change by Bradford spurred the school forward to pilot portfolio assessment, despite uncertain funding. Bradford searched for an appropriate means to credential their students' integration experience, one that would reflect horizontal and vertical curriculum alignment. They devised a senior project to tap the integration of skills and knowledge and reflect it in a project. The project is evaluated by a team comprising an English teacher, an occupational teacher, a parent, a business or industry professional who represents the student's occupational major, and a representative from the state's apprenticeship initiative.

Inverness is located in a state that allows for a general diploma. The state offers a testing program whereby high-achieving students may receive excellence stickers attached to the general diploma. Current state policy does not affect Inverness' integration efforts because the academy courses are taught on the college-prep level. Moreover, because a state proposal to introduce staged credentials will also focus on academics, academy staff are not concerned that this will affect curriculum integration.

Johnson is located in a state that provides a two-tiered diploma: general and advanced. The award level depends on the level of courses taken within a subject area, e.g., general math versus Algebra I. Johnson students all receive advanced diplomas because their courses are considered by the state to be college-prep courses. The state's diploma policy creates no hurdle or uncertainty for implementing integration at Johnson.

Nevertheless, Johnson implemented a senior project several years ago to demonstrate each student's cumulative expertise in an area of study. The project results in a written, verbal, and physical product that can be used by the student to obtain employment or entry into college. The senior project is augmented by the products of the many different projects required in the curriculum. Together they create a portfolio for the student.

SCHOOL TRANSITION AT ENHANCED ENGAGEMENT SITES

Planning Partners

At Franklin, partnerships have taken on a formal function. Following the state mandate, Franklin has moved toward site-based management by an advisory committee that includes three teachers, two parents, and the lead administrator. The committee controls curriculum in the school and has acted to bring new voices into curriculum decisions. Teacher representation allows teachers to voice their concerns. While other sites have concentrated on bringing in business and parents, Franklin has also brought teachers into its partnership.

In addition, the district has promoted "adopt-a-school" programs, in which local businesses become partners with the schools and provide input into curriculum decisions. These inputs have been supported by school surveys of businesses and parents, district-level surveys of local economic trends, and surveys by the state. All have been used in planning exercises to promote constructive change. Teachers and administrators at the school can rattle off employment data as well as certification requirements for the health and safety professions.

The state, less formally, encouraged Yardley to find community partnerships, advising the school that parental and community consultation would help to smooth the implementation of school change. Because Yardley's administrators perceive that parents influence their children's postsecondary choices and rightfully place demands on the school, they included parents in their initial planning by conducting a community survey and establishing a parent advisory committee to assist with future planning. Most parents opposed any changes that would lead toward tracking students into vocational education; they wanted the school to aim their children toward college. A small vocal group of Mexican-American parents were insistent that student outcomes be monitored. Participation on the parental advisory committee has been low for unknown reasons.

The state also suggested that Yardley develop closer ties to the local business community. As a result, Yardley requested that the local chamber of commerce resurrect its Education Committee and establish an adopt-a-school effort. Unfortunately, the result was fairly empty for both the school and the business group. Involving business in school planning was largely blocked by each side's perception that the other had only self-interest in mind. Indeed, business wanted to be able to use the school building for meetings or the band for community events. On the other hand, the school staff expressed frustration with the lack of high-wage employers in the community, because they had wanted to build a visible and strong career option for non-college-bound students. They complained that since warehousing is the local growth industry, their students had little to gain from a business partnership. Thus, the teachers have not pursued the relationship with much vigor. It is, then, not surprising that leaders of the Education Committee indicated that they are unclear about Yardley's improvement efforts. They suggest that the school might not be doing enough to promote college preparation, which they posit as a means to enhance local growth. This effort has essentially declined into a partnership for in-kind contributions, e.g., business donations for school breakfasts or loan of the school band for chamber events.

Transition Curriculum

Changes in curriculum and its organization did not reflect school transition per se at the enhanced engagement schools. Franklin is just now in the process of changing the focus of the school from a general vocational program to health and safety occupations. As the school moves in this direction, programs of study might change to emphasize the connections between what is learned at school and what is needed in health and safety occupations, regardless of whether those occupations require further schooling after high school or immediate employment can be obtained in the field. Administrators have worked with the community colleges and with the certifying boards in the health professions to ensure that the curriculum is rigorous enough to allow credentialing or transfer to the advanced education required in those professions. A major impetus for strengthening Franklin's career program is the

district plan to abolish the general track. Once it is abolished, all students will be required to declare an occupational major and choose between high schools in the district.

Yardley also employs career paths as a means to focus students toward life after high school. The school believes that this offers the best chance to expend its fullest efforts toward learning. Yardley's career paths were mandated by the school's steering committee, which funded counseling and teacher release time for career path meetings but not for curriculum development.

The result is a matrix organization for teachers, who belong to a career path and department, and for students, who belong to a career path and curriculum track. But career path assignments mean little to teachers or students. Teachers at Yardley said that career paths changed little of what students learned, after their initial career guidance exercise. For most teachers, the career path simply represents a group of teachers with whom they discuss general school issues, but not curriculum. The school neglected to fund curriculum development while grant funds were available; now budget pressures do not allow the translation of the career paths into curriculum changes.

Yardley began its integration effort with the notion that if a student can be focused better, he or she will find school more relevant and will thereby strongly engage with schooling. Careers might link what one learns in school to postsecondary life, therefore schooling can be a preparation for working and going to college. Career planning is seen as strengthening perceptions of this link and providing a focus for students. Students are first introduced to career planning at middle school, where they take part in a ninth-grade preparatory exercise using interest surveys. After promotion to high school, tenth-grade students work with guidance counselors using career surveys to determine their strengths and career interests. This information is used to guide students into a one- to two-week exploration exercise directed by English teachers and culminating with a research paper. Students use their personal findings to select a career focus. Counselors and English teachers report that the process seems to be useful for many students. It works especially well for special education students' transition planning needs, since these students are increasingly interested in coherent programs of vocational education and postsecondary training opportunities. However, this careful planning does not extend to what students study or how courses are organized. Our discussions with students revealed that while a few parents use the career path materials to help their children select courses, many students forget about career paths after a few months, and most college-bound students focus on college admission requirements, rather than career requirements. Without curricular reinforcement of career paths, students apparently use traditional guides, despite the counseling investment.

Yardley's school improvement plan calls for a program of career exploration, which was summarily delegated to teachers. Career exploration has little meaning for teachers, because students from all career paths are mixed in classrooms, and students from the various career paths do not get together for exploration activities. Without career paths that induce teachers to employ a career focus in teaching or some degree of leadership or vision, implementation falls to the discretion of individual teachers. The most popular approach is to invite guest speakers, commonly parents, to discuss their work. For example, an English teacher will invite an author, the drafting students will hear from an architect, or a carpenter will visit the woodworking lab. The teachers retain their subject-matter focus in selecting speakers. Only in vocational education, where students are taking a coherent course of career-

oriented studies, do teachers involve students in field trips and job shadowing. Many teachers make no efforts at all. Many of the teachers we inteviewed felt that they were not really part of the reform effort, but that it was something the steering committee, twelve of their peers, championed, along with administration.

Yardley's teachers have developed individual articulation agreements with community colleges for students concentrating in vocational courses of study. Likewise, college-prep students have advanced-placement opportunities at state four-year colleges and universities.

These articulation practices existed prior to the integration effort. The implementation of the innovation did not link articulation opportunities to general-track students, because innovators did not focus on general-track students per se. Rather, they sought to create a new comprehensive program for all students, using career paths to structure schooling, but they failed to change the curriculum. Neither the state funding grant nor other state policy directives led the school toward a fuller articulation program.

Transition Services

Franklin has followed the lead of the district in moving counseling toward the development of career plans in the early grades, with students choosing a particular field of study in the ninth grade. Thus, the counseling function at the school has been increased, with an emphasis on occupational counseling. This is augmented by the ninth-grade teacher teams who further counsel students as to career paths. Although improvements in other existing services, such as placement and work-study, were considered, they were not a major emphasis of the school improvement program.

In keeping with the career focus, Yardley carefully crafted its guidance efforts. First it funded low-ratio guidance counseling by shifting discipline to administration and adding several counselor positions. This has permitted counselors to meet with each student several times a year for career guidance purposes. The school also provides an employment service for students who want summer, part-time, and seasonal jobs. A half-time job coordinator routinely posts local jobs and coordinates an annual job fair for seniors. This is seen as a service to students and is not conceived as part of the career focusing goal; thus there is no attempt to connect career paths. Moreover, there is no attempt to analyze the characteristics of students the program serves. So although the school initiated, fully funded, and implemented the program under its school improvement plan, the employment service is disconnected from career paths. It is also not linked to existing work experience programs, i.e., school-sponsored after-school jobs programs and half-day work experience.

Credentials and Certification

Supported by district and state changes, Franklin has begun to implement a portfolio program to emphasize new types of credentials. The state will use competency-based testing to determine whether students are ready to progress and finally to graduate. The portfolios and career plans, begun in the eighth grade, will be used as forms of assessment and as products to be shown to potential employers and colleges.

Yardley is located in a state that allows for a general diploma and provides a testing program for the awarding of excellence stickers that are attached to the general diploma. The state is proposing adoption of staged credentials that focus on academic excellence. This throws some uncertainty on Yardley's plans for curricular integration and development of career paths, because parents and many teachers remain firm in their support of college preparation.

COMMON ISSUES REGARDING SCHOOL TRANSITION

State and district policies and type of school were major determinants of the ways schools focused on school transition as a means to integrate academic and vocational education. The enhanced academics schools mimicked the state's traditional schooling-for-jobs emphasis, so their transition efforts are primarily peripheral to the curriculum. The enhanced academics schools primarily refined existing school transition practices and policy. Although the Ohio schools adopted integration as a means of improving school transition, they expect their graduates to become entry workers rather than college freshmen. For this reason, integrated teaching and learning activities are linked to work experience.

Local autonomy, represented in our study by the enhanced relevance and enhanced engagement schools, enabled school transition practices to be integrated with school operations and services; they thus became central elements of schooling implemented by teachers and students, rather than by administrators or state policymakers.

The effect of autonomy was especially evident at the enhanced relevance schools. These schools offered a set of transition practices similar to those offered by traditional comprehensive high schools that aim at schooling-for-college. They also offered increased participation by external actors and attempted to insert transition practices into their curricula. Students whose career exploration involves attending seven occupational classes over two years (Bradford) or several weeks in a career center exploring career interests and college choice over two years (Johnson) have a very different learning experience about career choice than do students whose career exploration involves a day-long field trip to a vocational school, as in the enhanced academics sites, or requires that they author a research paper on their career search, as at Yardley. Moreover, two enhanced relevance schools connected career orientation to college preparation because of the seriousness and regard they have for exposing students to practical work experiences through internships and mentoring programs. They employed strategies to enrich students' and teachers' academic experiences and intertwine them with work experience. Because work requires marshaling academic and occupational skills, work experiences provide a powerful practice opportunity for integration.

The enhanced engagement schools centralized school transition in their teaching and learning activities and sharpened their aim of schooling-for-career and schooling-for-college. Attempts by the enhanced engagement schools to smooth the transition process for their students have emphasized the need to incorporate the required skills and knowledge into the curriculum itself and to make organizational changes to bring new partners into the school. In addition, while the sites were under no pressure to change their credentialing practices, they incorporated portfolio development and assessment or senior projects into the credentialing process of the schools.

Creating and implementing school transition policies changed many aspects of the schools: guidance counseling, tracking practices, credentialing, relations with businesses and parents. But perhaps more important, schools began discussions about some of the traditions of schooling, such as tracking. By focusing on the outcomes of schooling, they brought traditions and assumptions into clearer focus. Schools, however, were not able to change many of these traditions, and perhaps they did not want to. Thus, vocational schools in Ohio still focus on preparing students for the transition to jobs, while the mission schools still focus on college preparation.

7. CONCLUSIONS AND POLICY IMPLICATIONS

Our analysis of the case studies and our review of the literature point to many lessons for those attempting to integrate academic and vocational education over the next decade. We think these lessons are best viewed in general terms, as indicators of the kind of policy environment that would be conducive to integration, rather than as specific practice and policy recommendations.

This perspective is supported by our cases, which showed, if nothing else, a broad array of problems to which integration could be a solution. They showed many new practices adopted to encourage change. They also showed many policies that support these new practices, as well as situations where these practices were not supported and did not flourish as desired. Given this variety, it would be inappropriate to generalize specific practices or policies. Integration took on different characteristics at each site; nevertheless, the general themes that emerged might be useful to others following in the footsteps of these innovative schools.

We note several caveats to our conclusions. First, the schools we studied undertook their integration efforts prior to many very recent changes in state legislation which may be more supportive of integration. Representatives from our sites noted that the climate for integration had changed over the course of their efforts. Many felt they were well-positioned to react to state-level changes in educational policy because of their efforts.

Second, our sample was limited, and the experiences at the sites we studied might not be generalizable to all other sites. Also, some of their experiences may have been influenced by factors, such as preexisting achievement levels of students, that are not adequately captured using our methodology. Finally, we note that education reform is a value-laden issue. Integration might not be the answer for all schools. Other reforms might be more appropriate. Which reform to embrace will have to be decided at the site level; we would hope that the decisions are based on comparisons between different competing reforms.

INTEGRATION CAN BE PRODUCTIVE FOR ALL TYPES OF SCHOOLS

The variety of schools represented by our case-study sites suggests that integration can potentially apply to all types of high schools serving all types of students: vocational, academic, and general. Comprehensive schools, vocational schools, and mission schools all identified problems to which they thought integration might be a solution. Our research shows that rather than being solely a vocational education reform, integration can be considered by the full spectrum of school types.

This broad view of integration is not encouraged by existing federal-level policy. The federal-level requirement for schools to plan integration applies only to schools receiving Perkins funds and only to vocational programs. Though the federal language does not preclude integration for academic students, it does not directly support it.

States appear to be following the federal example. Many state-level administrators we talked with did not view integration efforts at comprehensive or mission schools as useful to their planning. Without information to the contrary, state and local planners will continue to

see integration as pertaining only to vocational programs. This perception is supported by the separate organizational structures at the state and federal level which often preclude the integration of academic and vocational education policy. We believe that if the federal government is really interested in promoting the concept of integration, federal policymakers should inform their state counterparts about the variety of schools and students that might benefit.

INTEGRATION IS BEST APPROACHED AS A COMPREHENSIVE SCHOOL IMPROVEMENT EFFORT

Both our literature review and our case-study analysis revealed that integration efforts on the part of sites, districts, and states potentially constitute a comprehensive reform of the American high school. While no single school in our sample has yet to accomplish a full reform, and several probably never will, the trajectories of several schools' changes might in fact produce such permanent redirection. Certainly many administrators and teachers talked in these terms.

Among the sites we studied, integration reform progressed most successfully when it was understood as a comprehensive school improvement program. In attempting to integrate their programs, schools, districts, and states changed many of the commonplaces of schooling. Integration attempts focused on the four themes we identified, but accomplishing those themes entailed major changes to staff mix, staff expertise, staff interactions, textbooks and materials, the structuring of the school day, funding allocations, counseling, certification, etc. This conclusion confirms the earlier conclusions of Grubb et al. (1991a). The schools that set out to make comprehensive improvements were those that understood—perhaps not initially, but very early in the process—the interactions among the commonplaces. These sites planned long-term efforts that resulted in substantial changes to the schools.

The differences among the enhanced academics schools offer a clear example of the changes accomplished when integration is made the center of a school improvement plan rather than simply an add-on to existing school practices. Glendale aligned the state integration drive with its own efforts to improve its vocational curriculum, develop its staff, improve its relationship with the business community, and become a first-rate vocational school. As part of this effort, it increased tax levies and permanently allocated part of this increase to staff development and collaboration. Teacher evaluations were changed to offer new incentives for collaboration, and the leadership in the school strongly emphasized the rewards to the school of supporting these changes. This nexus of policies and practices allowed teachers to develop new curricula, to continually collaborate, and to work with the administration to make Glendale an excellent school.

The other two enhanced academics schools did not think of integration as a total school improvement package and did not plan well for its implementation. The vocational curriculum was not revised, support for teacher collaboration was scant, and staff development programs were not provided. Tax levies were not raised, and when taxes were raised, funds were not allocated to integration efforts. While the attitude toward integration might be changing at these schools due to the learning experiences of teachers, most teachers reported slacking off on integration efforts. The administration at both schools has supported this regression implicitly, by not providing the support needed, and explicitly, by stating that collaboration was

not needed in the future. The experiences of these two schools illustrate some of the drawbacks of undertaking integration reform at sites that do not have the fiscal or managerial resources to accomplish major changes.

We conclude that the first step in developing an integration effort in response to the Perkins Act amendments should be to develop a vision of what the school should be and the practices that need to be changed to achieve that vision. This vision will be site-specific. Rather than precluding such planning activities, the Perkins language encourages them. Perkins does not require a specific integration program. It does encourage locals and states to plan together to achieve integration. In this way, the federal language encourages a visioning exercise that would make integration the focus of comprehensive school improvement plans.

This visioning exercise might usefully include reviews of other reforms that appear to either compete with integration or complement it. The federal definition of integration is vague enough to allow many different reforms that would complement a particular school's goals.

INTEGRATION TAKES YEARS TO IMPLEMENT

Other authors have pointed out that school reform and integration cannot be accomplished quickly (Berman and McLaughlin, 1975; Grubb, 1991a). Our site analysis supports this view. Integration reform has taken many years to implement. Several schools have planned and implemented integration over five-year periods and still have not accomplished everything they wished to. Mandates to integrate do not lessen the time needed. All of the enhanced academic sites took at least five years to implement integration.

Policymakers at all levels must recognize the amount of time required in their planning efforts. Efforts to rush integration or to evaluate its effects prior to its full implementation might lead to poor results. They could also set up false expectations on the part of teachers as to the level and duration of effort required. Even seemingly simple steps, such as adopting AA curricula, took several years, while teachers learned the new materials and grew comfortable with them. Recognizing that integration takes years to accomplish will allow the development of realistic implementation plans.

INTEGRATION CONNECTS TO SYSTEMIC REFORMS

We found that integration efforts at sites were commingled with several aspects of systemic education reform currently being espoused. We also found that several sites used integration efforts to focus these different efforts.

Integration efforts appear to align with reformers' calls for site-based management and greater teacher participation in decisionmaking (Hill and Bonan, 1991; Chubb and Moe, 1990). Sites in our sample were better able to integrate when they were given some measure of regulatory relief. The stories told at the enhanced relevance and engagement sites echoed those told by other schools that were experimenting with decentralization as a means to improve schools. Removal of district and state curriculum regulations was a first step toward specific improvements in curriculum to better serve students. At the sites in our sample, teachers took on the responsibility for curriculum development. This shift of responsibility was aided by the formal transfer of authority to teachers through curriculum development

committees, staff senates, teacher-led steering committees, and formal restructuring efforts. It was helped informally by provisions made for supporting practices such as teaming to develop curriculum.

Integration efforts also aligned with efforts to create mission-oriented schools and to provide choice to students in the selection of schools (Hill et al., 1990; Chubb and Moe, 1990). As schools in our sample integrated curricula and changed other services, they began to define themselves differently from other schools or to increase the existing differences. For example, in Ohio, the vocational schools attempted to improve their curricular offerings not by mimicking their academic counterparts, but by complementing their traditional strengths with improvements in their weaker areas. They did not move toward standard didactic teaching of academic subject matter, but toward activity-based teaching of such subject matter. When well-implemented, this change provided an option for capable students who had been poorly served by the existing academic curriculum in the comprehensive high schools. In addition, several of the vocational schools created half-day programs for college-bound students to give them the opportunity to expand their educational backgrounds. Inverness' attempt to create a curriculum for students with technological interests is another example of providing a program tailored to the needs of specific students. Within Johnson, choice was offered between types of curriculum and teaching styles. Teachers held strongly to the idea that the school, while supporting an excellent science and technology mission, should cater to the learning needs of different students and provide the fullest curricula possible.

Integration was also consonant with reformers' notions of increased teacher professionalization and an emphasis on collegiality (Little and Threatt, 1992), both of which have been shown to be key factors in schools' obtaining and maintaining excellence (Purkey and Smith, 1983). Some schools in our sample saw integration as a goal and collaboration and professionalization as the means to obtain it. Rather than emphasizing professionalization or collegiality per se, these schools used them as a means to achieve curricula and pedagogical reform, providing the basis for teachers to collaborate and grow professionally. Integration efforts were convergent with efforts at teaming, teacher-led curriculum development, teacher-led school governance, and staff development. Integration suffered when these activities were not fully supported by funds and staff development programs. An underlying theme at several of the sites was the need for improved teaching skills and teacher subject-area expertise. This was provided through different means, including new hires and teaming to learn new skills.

Integration also connected directly to efforts to improve the testing methods employed in the educational community. While schools were unable to break away from some of the traditionally mandated tests, such as the college entrance exams, they and their states sought other means of assessment that emphasized the totality of learning and the ability to apply theoretical knowledge to the practical problems faced by adults. Several schools adopted senior projects, group grading, and portfolio assessment. They were assisted by moves in several states to develop competency-based tests. These tests and practices are more costly per student than the multiple-choice exams currently used, but they are necessary to support the move toward integration of knowledge rather than rote repetition of unconnected facts. At several sites, this effort was beginning to enable a review of credentialing procedures.

Taken as a whole, these types of actions also connected to moves toward changed state accountability over sites. While sites were given decentralized control over curriculum and

pedagogy, they were still held accountable for the products they produced. Districts and states therefore moved to pressure schools in new directions through new accountability measures. For example, Ohio's investment in competency-based testing moved it away from curriculum control toward accountability on final results. Kentucky's shift to site-level management moved the state and district away from curriculum control and toward increased accountability based on final student outcomes that are aligned with a fuller appreciation of the student as a whole. This is supported by portfolio assessments and competency-based tests.

We conclude that integration is complementary to several other reform efforts and might even provide the means to focus them. Integration allows policymakers to view the many different calls for reform as part of a cohesive effort—not one pulling in many directions. Through the lens of integration, these reforms can work jointly toward providing a richer experience for students to prepare them for the complexity of adult living.

INTEGRATION FLOURISHES ONLY IN A CONDUCIVE REGULATORY ENVIRONMENT

Our case-study analysis showed that sites achieved progress toward their integration goals when state and local regulations aligned to support school change; progress was hindered when regulations pulled in different directions. Implementation of integration reforms at the site level can be easily disrupted or channeled into unproductive activities if state-level policies do not support the sites' improvement plans.

The enhanced relevance sites reported that they attempted integration and were able to accomplish it because of the permissive regulatory environments under which they worked. But these environments are not typical of the majority of schools. Hampered with curricular and organizational regulations, most schools would be unable to plan for integration or accomplish it. It should be noted that the enhanced relevance schools also had other factors that might have benefited them in their attempts, such as student bodies that were at or above grade level.

Integration was accomplished at the enhanced academics sites as well, with all sites adopting the mandated course offerings. However, the experiences of these sites resembled those reported in other studies of implementation of top-down directives (Bardach, 1977; Berman and McLaughlin, 1975; Gross, et al., 1971; Mazmanian and Sabatier, 1981; Pressman and Wildavsky, 1973). When the directive addressed the site-level problems appropriately, integration flourished, as in the case of Glendale. When it did not align with site-level conditions or problems, integration languished. The enhanced academics sites reconfirmed that inconsistent efforts result from top-down directives and strict regulations that are not accompanied by funding or other supports.

All sites noted that existing regulations or traditions precluded some innovations that they had considered and that they thought would improve course offerings. Common traditions or regulations indicated as barriers were seat-time regulations, graduation requirements, nonacceptance of applied courses, hiring practices, college admission requirements, union seniority rules, certification processes, and teacher evaluation rules. Many of these regulations are state-controlled in an effort to maintain minimal levels of curricular excellence.

Ambitious integration attempts will require state and local officials to act together to develop accountability mechanisms that encourage improved curricular offerings while ensuring minimal competencies. More permissive regulatory regimes might be counterbalanced by alternative forms of assessment and accountability. A systematic review of governance at the state and local level was beginning to occur at some of our sites but had not yet affected the local governments. Oregon, California, and Virginia were in the process of making major changes to state law, but the sites we studied had attempted integration several years prior to this effort. Franklin is the only site that had been under a decentralization regime at the time of integration.

INTEGRATION REQUIRES CAPACITY-BUILDING INVESTMENTS

We found that integration flourished when states and sites supported it with a full array of capacity-building investments. Most important were full support—including funding—for staff development and collaboration. Local support for this is not enough; state-level support is required.

Our cases showed that integration is teacher-driven. It requires teachers, both academic and vocational, to change the manner in which they teach, to master new curricula, to collaborate to develop curricula, and to learn from each other. These new behaviors have to be learned. The capacity of the teacher workforce to support integration has to be built over several years. When support for these types of activities at our sample sites was missing or diminished, teachers' efforts likewise declined.

At the site level, capacity-building activities included teaming, summer workshops, joint planning periods, observation periods, new evaluations, and reallocating funds to these efforts.

Our study showed that there are very few state-level supports for this type of activity. States did not offer workshops geared toward integration or team-building. Teachers colleges and universities were not involved in the development of new curriculum. (Ohio, however, is now moving in this direction.) Most important, state funds were not allocated for capacity-building activities, even in Ohio, where integration was mandated. Interviews with state officials indicated that they thought the capacity for integration was available through the voluntary efforts of teachers.

We found this view to be shortsighted. Integration requires the teaching force to revamp its production function and upgrade skills. While this can progress on voluntary efforts, progress might be quicker and less illusive if funds were available for retraining the workforce and incentive systems were revised to promote the desired behaviors. Without this type of investment, integration efforts will rely solely on the good intentions of already overworked teachers.

Other types of investments are also required. In all of our case studies, the existing curriculum was inadequate, as was the testing regime that continued to support outdated practices. Yet sites do not have the wherewithal to develop new curriculum packages and tests. Historically, this development activity has been performed by consortia of states in cooperation with publishing and testing firms. Some states, including Ohio and Kentucky, are beginning to make investments in developing new curricula and tests, but others are not.

Without sustained investments in curriculum development, each site will be forced to "reinvent" integration. While local variation might be a necessary condition of school reform (Berman and McLaughlin, 1975), some strong base of existing curriculum would promote integration. Supported with strong inservicing, teachers would be better able to learn the new materials and supplement them as appropriate, instead of developing materials from scratch each year. Networks of teachers to aid the inservicing would also be beneficial.

Clearly, funding is a major constraint on integration efforts. When funding dwindles, site efforts dwindle. The current period of fiscal retrenchment is not conducive to a strong investment strategy. In these times, it is more important than ever to use resources effectively.

Our site visits showed that curriculum development, test development, and staff development were the key functions needing funding. As noted above, these functions are usually undertaken with partners: testing firms, publishers, consortia, universities, and colleges. Improving these partnerships might be a means of more effectively using the resources available. Statewide or regional consortia might offer the opportunity to develop the capacity needed without any single district being overburdened. The state and federal governments potentially have strong roles to play in this regard.

Not to be overlooked are the schools and teachers that have already attempted integration, have developed curricula, and now stand as experts. Accessing these schools and individuals in training formats or through documentation of materials would be the first step in reducing the cost associated with integration, as well as putting existing expertise to good use. Again, state and federal governments and teachers colleges potentially have roles to play in developing networks and documenting existing programs.

INDUCEMENTS CAN PROMOTE INTEGRATION

Inducements, the temporary transfer of funds to promote certain actions, could potentially play a role in promoting integration. Several of the sites we studied undertook integration because district or state grants were offered as inducements (Bradford, Inverness, Yardley). Without these inducements, these efforts would probably not have been undertaken. And, like other implementation researchers (Berman and McLaughlin, 1975), we found that as the grant monies ran out, integration efforts slowed. In addition, while innovation flourished at the sites that were offered inducements, very little effort was made to document the changes made to assist other schools in following suit.

We conclude that while the inducements promoted integration, they were not structured well to institutionalize it. Nowhere were the inducements coupled with strategies to enable replication at other sites. Similar temporary or one-time grants could be used to fund like programs to promote further innovations, if desired, but these should be coupled with more systematic efforts to learn from the pilot experiences.

Further integration depends on a longer-term investment strategy in capacity-building, as discussed above. The exception to this is at the local level. Our cases showed no use of promotions, merit raises, or bonuses associated with teacher attempts at integration. Pay for time worked and appeals to professionalism were the means used to gain teacher support. While integration was accomplished with these means, many teachers were clearly over-

worked and felt underappreciated. Teacher inducements at the site level might be used effectively to promote integration.

Teacher inducements could also be coupled with a capacity-building strategy. The existing "expert" teachers could be provided with grants to document their work. Conversely, sites undertaking integration could be allotted grants to ensure that curriculum documentation occurs. This documentation could then be shared with other sites through consortia or networks.

INTEGRATION PROMOTES THE RETHINKING OF EDUCATIONAL CONVENTIONS

We believe that integration promotes rethinking of educational conventions. Our cases showed that as schools and states attempted integration, they began to rethink some of the conventions that permeate the educational system and are instituted in the facilities, regulations, and thinking of educators.

The rethinking of school transition practices as part of integration was aided by the inclusion of new groups in the decisionmaking: businesses and parents. New perspectives fueled attempts to remove the current set of diplomas and tracks that define separate education programs. Two of the vocational schools implemented new half-day programs to better serve traditionally academic students. While physically separated from academic programs by their separately sited facilities, these schools began to question the system of diplomas and educational tracks that had defined the student populations they served. They began to woo students they had traditionally not served by offering an integrated curriculum that would suit the students' interests and still meet college entrance requirements. New state plans will require high school students to make a choice between vocational and academic programs. This state policy may work against the site-level integration effort.

Another school also began efforts to break down distinctions between academic and vocational tracks, but the existing college-prep and diploma structure within the state made parents fearful, perhaps legitimately, that their children would not be well served by this effort. In Oregon and Kentucky, removal of the general track has not forced a choice. Instead, all students must now be prepared for both a job and college. Integrated curricula can potentially serve the purposes of these states by providing academically rigorous curricula, with applications, that meet the traditions of college acceptance.

Currently, however, integration is impeded by the very traditions it attempts to change. In particular, both the enhanced academics and enhanced engagement sites were inhibited in what they attempted, not only by policies, but by existing practices of the lower-grade-level schools. The sites noted the need for increasing remediation of entering students and focused a good deal of attention on this activity. Furthermore, rigorous course work was not attempted simply because many students would not be able to successfully complete it. The enhanced relevance sites served only students with fairly strong academic preparation. As such, they were not limited by existing student capacity in their attempts at innovation. As integration becomes more widespread, higher-grade-level schools may begin to demand more preparation of students by lower grade levels. This was beginning to occur in Ohio and was supported by some changes to state policy. If this is an effect of integration, it might be its most powerful influence on changing the traditions of education.

Finally, teachers and administrators across all sites complained that integration could not be fully accomplished within the current eight one-hour periods of the school day. Some even said the school year should be expanded to allow teachers to cover both theory and practice. The traditional ways in which time has been allotted were changing in several schools that were experimenting with block scheduling. The length of the school year remained unchanged, but some schools were beginning to challenge this tradition as well, if only in discussions.

If integration proceeds, we think it might enable fundamental changes in the current structure of educational programs and the conventions that support that structure. If integration lives up to its promise of both academic rigor and richer preparation for work, it could promote the abolishment of tracking and potentially enable equity within the educational system. This has yet to be accomplished at any of the sites we visited, but administrators and teachers saw the potential for integration to bring about many changes in the traditions of education.

Appendix

SYNOPSES OF CASE-STUDY SITES

BRADFORD, OR. In 1985, the school staff began the process of obtaining money from the district for facilities and equipment upgrades. Feedback from business clients, attendance at conferences, and readings by the administrators indicated the need for curricular improvements as well. A steering committee of administrators and teachers developed a school improvement plan that consolidated the vocational offerings, increased credit requirements, required a strict progression in both academic and vocational subjects, introduced applied science and math courses, and increased articulation between English and vocational programs.

Committees of vocational and English teachers wrote an integrated curriculum for the entire ninth-grade class. The writing committees were provided with some time for this activity during the first year. In the intervening years, English and vocational courses for the tenth through twelfth grades have been integrated. The school is now developing senior projects.

FRANKLIN, KY. This comprehensive high school is located in a district that has undergone restructuring efforts over the past ten years. Those efforts mandated site-based management and participatory management within the schools. As part of its school improvement plan, the site has attempted many different curricular reforms, including a pilot of the SREB integration program, which focuses on using application and theory to motivate students to gain competency in math, science, and English. The teachers were chosen by the principal to attend the SREB conference and CORD training. These teachers implemented the curriculum the following year. The vocational teachers, who were supposed to support the effort and provide applications, did not become involved. Instead, the attention of the school remains fixed on developing a vision and consensus to support that vision as they try many different curriculum packages.

GLENDALE, OH. This vocational district serving eleventh and twelfth grades began integrating its programs in 1982, prior to a state-level mandate. The impetus to integration was a survey of businesses in the area which showed that graduates lacked basic skills in communications, math, and science and needed more generic work skills.

The school superintendent led a five-year improvement effort that overhauled the vocational curriculum and substituted AA for vocational lab time. When the state began an effort to increase academics in vocational programs, the site acted as a pilot. The site supported long-term teaming of AA and vocational teachers, summer workshops to develop curriculum, joint planning periods, and documentation of curriculum. All vocational programs have been revised and AA is required of all students. The number of AA teachers has increased as the number of vocational teachers has declined.

INVERNESS, CA. This is a technical academy-magnet pioneered within an affluent suburban school district. The academy came into being when an entrepreneurial district administrator assigned a member of the district staff to "do something different" for the middle third of students. The staff member established a districtwide task force comprising administrators, teachers, and parents to plan the academy.

Originally a free-standing district program, housed off campus and under district supervision, the academy moved to a comprehensive campus, becoming a school-within-a-school during its fourth year. The district continues to fund the program through a four-year state grant, but program oversight fell to school administration in fall 1992, as will financial support in fall 1993. The original teaching staff disbanded at the end of the third year, leaving one original teacher with less-experienced teachers and a new recruiter.

Now in its fifth year, the program combines academic and technical subject matter within courses, offers small classes (12 to 15 students), and offers internships at local firms and articulation/advanced-placement opportunities with local community colleges. Admission to the grade program is selective and focused on the technically talented or interested "middle third" of eleventh- and twelfth-grade students who might prefer an alternative to traditional college-prep coursework. Relocation and staffing changes altered progress on curricular improvement and integration. Facing the loss of grant funds and only a trickle of referrals, the academy staff looked for ways to attract students to the program. With the promise to provide individual attention to a small cohort of students who voiced interest in technology but lacked prerequisites, the teachers accepted students perceived as "not appropriate" for the academy's college-prep curriculum. The Algebra I prerequisite was relaxed and admission was limited to only a few limited English proficiency (LEP) students. However, counselors charge that the academy misrepresents its purposes and instead promotes the "pretense" of serving college-prep students, rather than actually doing so.

Struggling to make its enrollment minimum based on comprehensive school standards of 30 students per teacher, the academy finds little support among school counselors, who are skeptical about its curriculum.

JOHNSON, VA. This is a highly selective mission school that prepares students for further education in science and technology. To fulfill the school's mission to provide excellent academic and technical preparation, the principal has led an effort over the past five years toward more integration of application and theory so that students could use their knowledge in practical ways. Teachers interested in the principal's vision voluntarily formed experimental teams to integrate sets of courses: freshman English, biology, and technology; junior physics and pre-engineering; and sophomore math, computer science, and chemistry. The school also requires a senior project to demonstrate mastery in a specific area. The teams were allowed to experiment for several years and were provided with summer noninstructional time and noninstructional joint planning periods. The junior pilot failed because of poor interactions between the teachers and staff turnover. In 1992, the principal mandated the freshman integrated program for all students. Teachers who had once supported the program on a voluntary basis began to question this decision, as did those who had not been involved.

MARKHAM, OH. This large vocational district serves eleventh- and twelfth-grade students from rural and suburban locales. The district began making academic improvements, focusing on math, two years before the state instituted AA pilots. The district adopted AA for its math, communications, and science classes in 1986. In conformance with state guidelines, AA teachers were assigned reduced teaching loads of four courses the first year and five courses the second year. Joint planning periods for vocational and AA teachers were not built into the master schedule on a consistent basis, so joint planning was accomplished during preparation periods scheduled at the beginning and end of the school day.

Vocational teachers were expected to attend AA classes to supply examples of applications as needed. Although the potential for a reduction in vocational teachers was recognized by administrators and teachers, it was not discussed openly. Reductions have occurred through attrition, through declines due to falling enrollments, and through shifts in vocational teacher responsibilities.

To support the move to AA, the school reorganized its departments. Formerly, all academic teachers had reported to an academic supervisor. But to reinforce the perception of AA as occupationally specific academics, the school eliminated the AA department and reassigned each AA teacher to a vocational department. The AA teachers are now evaluated by a vocational supervisor. Not all the AA teachers support this change. Those who object feel the loss of colleagues and disciplinary focus. Those who favor the change feel that they are part of the vocational team and focus on occupations.

WARWICK, OH. Serving eleventh- and twelfth-grade students, this relatively small vocational district instituted AA in 1989 in response to a state mandate. The adoption of AA coincided with a change in district and school administration, which left only one month for school-level planning. Notified of their reassignment to AA just weeks before the start of the school year, teachers soon found that they would need to create their own lesson plans, since available curricular materials were too generic to be useful and the state workshop did not cover curricular and pedagogy changes. This meant that AA teachers would have daily course preparations for four different vocational programs and with four different vocational teachers. Administration provided AA teachers two periods of noninstructional time to lessen the burden.

At the same time, concerns with vocational teacher job security, which was threatened by the assignment of academic teachers to AA classes, created their own pressure, since teacher teaming is required for horizontal alignment of an AA class with the vocational lab. The second year of integration was a rocky repeat of the first for AA teachers, many of whom were again reassigned just before the school year to five new vocational areas and were given less noninstructional time for preparation. Vocational teachers remained uncertain about their job security. Tension between teachers and administration was high, as the change process proved difficult for all.

Now in its fourth year of AA, the district has secured adequate funding through local taxes, federal Perkins funds, and new state programs to create career plans and career passports. Although vocational teacher jobs are somewhat threatened by low enrollment, this problem is limited to specific programs and not related to the introduction of AA. Tension between teachers and administrators has subsided on this matter.

Vocational teachers are now reassigned to teach employability and entrepreneurship classes and to work as tutors for students who failed the state ninth-grade proficiency test.

YARDLEY, CA. This is the single comprehensive high school (serving grades ten through twelve) in a highly decentralized school district. To combat student apathy and to keep students from dropping out, the school secured state grant funds to create a "model school" that students would find more relevant to their lives. The school reorganized itself into occupational clusters to accommodate the interests of all students—those with college aspirations and those with work aspirations.

Students' career interests are tapped by career counseling conducted by the counseling staff and an exploration exercise supported by the English department. Thus far, administrators, counselors, and teachers have worked together to change the organization of the school. A reorganization of priorities beyond this has not materialized; little has changed in the classroom, and teachers are unhappy about this. But they are now beginning to think about ways to incorporate the career focus in the curriculum without reinforcing tracking.

This school is in the fifth year of change. A steering committee comprising teachers, counselors, and administrators took a year to plan and consult the community and then set to work on the organizational changes—matrixing departments into occupational clusters and altering the roles of counselors and administrators. All the participants had to rethink their roles within the context of organizational integration. It has taken five years for teachers at the school to develop the will to begin curricular integration.

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